

AIRFIX magazine

DECEMBER, 1967

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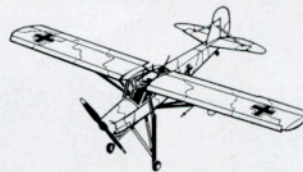
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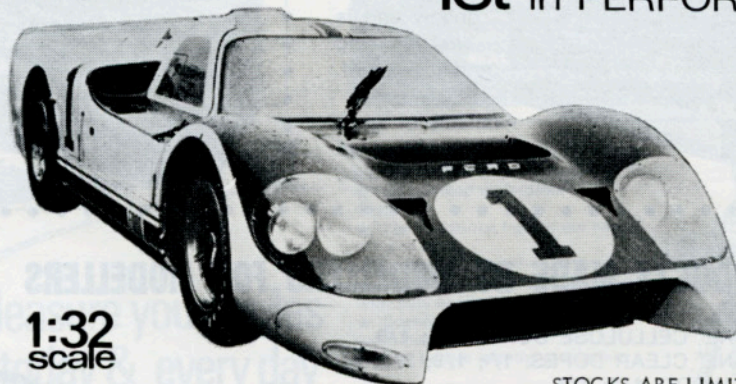
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AIRFIX magazine

AIRFIX

FOR PLASTIC MODELLERS

magazine

Volume 9, Number 4
December, 1967

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COVER PICTURE

Superb painting by J. D. Carrick shows the Canadair-built Sabre 5s of the RCAF Aerobatic Team 'Golden Hawks', formed in 1959 and disbanded early 1967, flying over Niagara Falls, and makes an excellent colour reference for anyone tempted to finish a model Sabre in this flamboyant scheme. Picture comes from 'Aircraft Markings of the World 1912-67' reviewed in this issue. (Illustration courtesy Harleyford Publications)

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Editor CHRIS ELLIS
Art Editor MICHAEL ROGERS
Advertisement Manager PETER MACER

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NEWS FROM AIRFIX

The world's greatest value in construction kits

- J-Type Ford and Mako Shark
- Monkeemobile

LAATEST Airfix Elite series models are 1:24 scale construction kits of two of the more interesting of Detroit's recent creations, the Chevrolet Mako Shark IV 427 and the J-Type Ford GT.

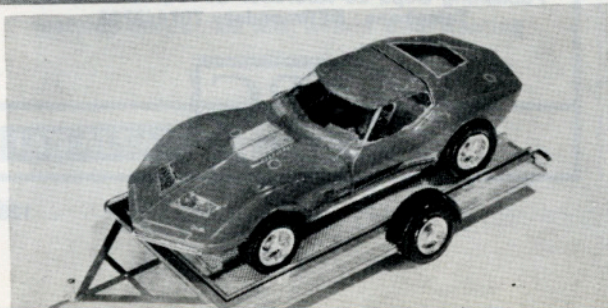
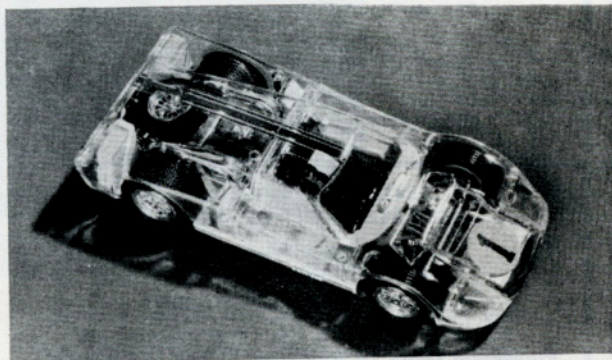
The Mako Shark spans the gulf between the successful Chevrolet Corvette Stingray and the 1968 Corvette. The most obvious innovations embodied in the Mako Shark are its louvred rear windows and retractable rear bumpers.

The J-Type is a member of the Ford line of GT racing cars built specifically and successfully to win the 1966 and 1967 Le Mans races and is built around the Ford 427 cubic inch Le Mans engine.

Each model consists of 140 moulded polystyrene parts—half of them chrome plated. A wealth of detail is reproduced in these outstanding kits.

The bodywork of the Ford 'J' is moulded in transparent polystyrene which can either be painted or left clear to show off all the interior details in the 6½-inch long model. Alternatively, it can be painted on one half only, leaving a 'ghost'

Below: The Ford J-Type. **Bottom:** The Mako Shark on its trailer.



The British Hot Rod Association recently staged a 'Custom Show' at Grants of Croydon where one of the main exhibits was the prize-winning Airfix Pontiac GTO seen here being handed over by its builder, M. Collins (left), for the show. Model is a dragster conversion from the standard kit. The BHRA hold Junior Drag Racing sessions on the first Sunday in each month, including Rod and Custom contests, until March 3, 1968, at Philips Works Social Hall, Purley Way, Croydon, and enthusiasts are welcome at these events.

view from the other side. An extra feature of the 7½-inch long Mako Shark is a loading ramp trailer.

Fully illustrated instructions are included with these new Elite kits which are priced at 16s 6d each.



Above: The new Airfix Monkeemobile has plenty of customising potential.

THE 100 square foot 'way out' car designed for and driven on television by the Monkees singing group is another addition to the Airfix Elite 1:24 scale series of model car kits. An appropriately 'pop' version of Detroit's giant Pontiac GTO, the 'Monkeemobile' was lengthened and completely redesigned by Dean Jeffries especially for the show.

Power for the 'Monkeemobile' is provided by a 'blown' six-litre V-8 engine. Emergency braking is by means of a tail-mounted drag 'chute. These and all the other features of this unique car are embodied in the 9½ inch model kit.

The kit includes full instructions, a set of Monkee transfers and a Monkee key-ring medallion and costs 16s 6d.

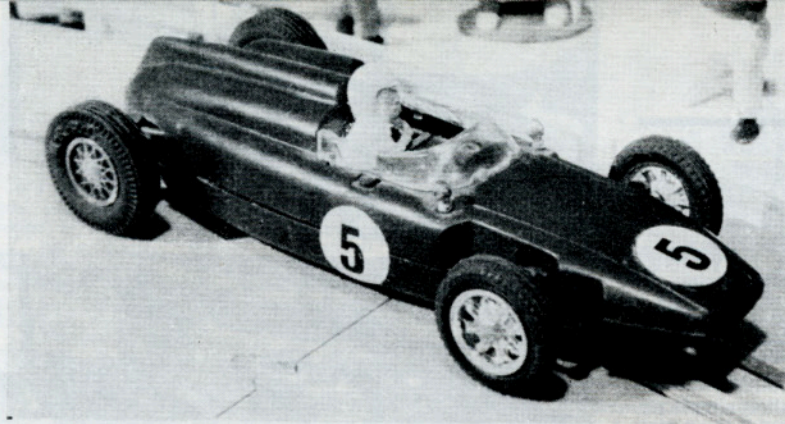
CHANGE OF ADDRESS

Would readers please note that from **December 1, 1967**, the Editorial Offices and Advertising Dept of **AIRFIX magazine** will move to a new address:

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All correspondence should, from that date, go to the new address.



NEW CARS FOR OLD

Geoff Snell on refurbishing Airfix racers

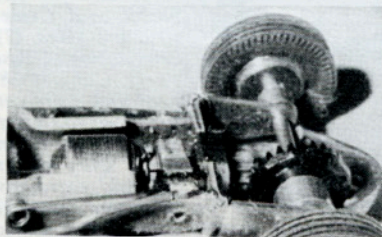
IT is, unfortunately, inevitable that any slot car motor will eventually wear out. Some people then discard the whole car but the usual procedure is to buy a new motor. It is not, however, essential to replace the motor with one like the original and this can present an opportunity to fit a more powerful motor in order to get more speed.

The MRRC 3-pole motor is far more powerful than that supplied in the Airfix 'standard' cars and it says a lot for the roadholding of these models that they will accept this motor and still give excellent handling. Fitting the motor is easy, requiring only simple tools, and, for the price of a motor and a pair of wheels one can transform a worn-out car into one that can provide a very useful introduction to club racing.

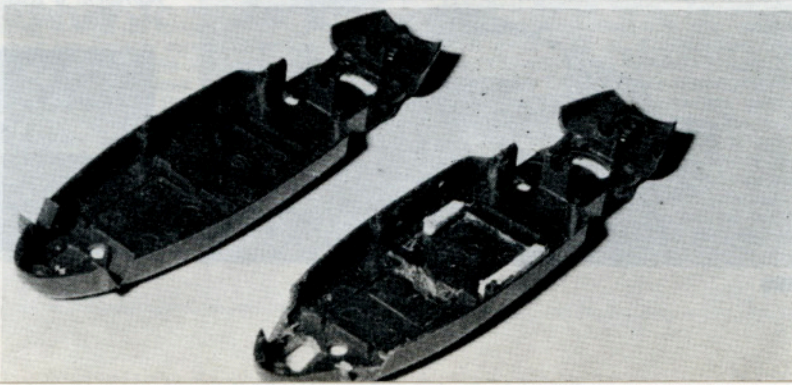
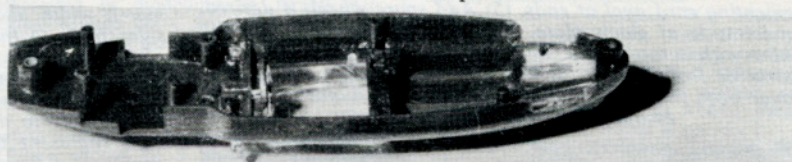
Remove and discard the old motor and rear axle, then press a pair of MRRC wheels and tyres of the same diameter as the originals on to the axle of an MRRC 3-pole motor—which should be bought complete with axle and 3.5:1 nylon gears—until the track of the original axle is obtained. Should this leave any axle protruding through the wheel this should be cut off flush with the hub.

A certain amount of the body has to be cut away to accept the larger motor and axle and this varies from car to car, but the photographs show what is necessary for the FI Cooper. On all cars the motor must sit flat on the body pan so that the centre line of the motor is in line with the body joint and the motor and axle turn freely. Cut away as much of the lower body section as is necessary to achieve this, then stick pieces of

polystyrene on the base to locate the motor. When the cement has set, hold the motor in position with Sellotape and try the top of the body in position, again cutting away as much as is necessary for the motor and axle to turn freely. When this is done drill two small holes in the lower body pan to correspond with each



Above: Close view of MRRC motor installed, with fuse wire retaining loops on bracket. **Below:** Modified upper body half. **Bottom:** Modified chassis pan with unmodified chassis (left) for contrast. **Heading:** Completed conversion with MRRC rear wheels and tyres.



forward motor lug and further holes each side of the 'U' bracket, making eight holes in all. Solder a short length of flex to each motor brush and, with the motor held firmly in position against the body pan, test the motor. If it does not run it is probable that the lower brush is being lifted off the commutator, and if this is so the body should be cut away to clear the brush.

When the motor runs well in position it can be retained with four loops of fuse wire round the motor lugs and bracket and through the holes drilled previously. The wire should be twisted tight and it is well to solder the joints to ensure that it does not work loose.

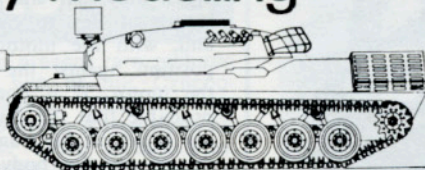
The motor should now be tried with the top of the body in position. Failure to run, again will probably be due to the brush being lifted off the commutator. When the motor runs satisfactorily with the body *in situ*, the braids should be replaced and cut off just behind the retaining lugs. With the correct direction of travel established, the ends of the flex from the brushes can be soldered into them. The steering unit can now be replaced, the body re-assembled and the model can be track tested. On most models there is no room for the driver with the larger motor in position but this can be overcome by cutting him off at the shoulder and sticking him to the bulkhead.

The controller supplied with Airfix home racing kits is unsuitable for use with powerful motors like the one used here and one of the MRRC 15 ohm units should be used. The performance of a car modified in the manner described here is more than adequate for home tracks and, once the tyres are scrubbed in, should see off almost any opposition regardless of price.

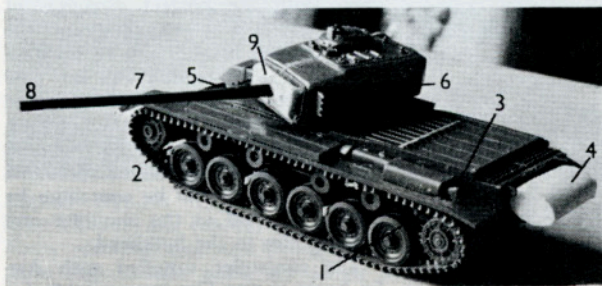
Military Modelling

by

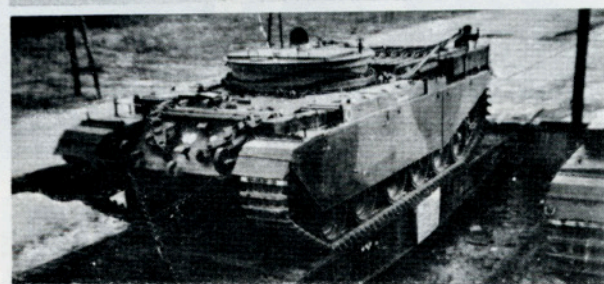
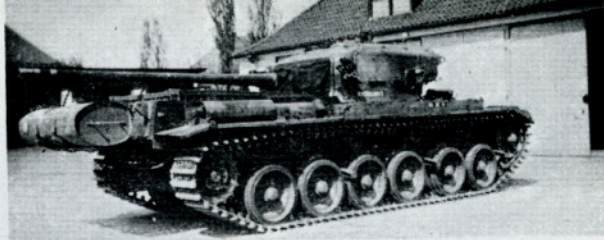
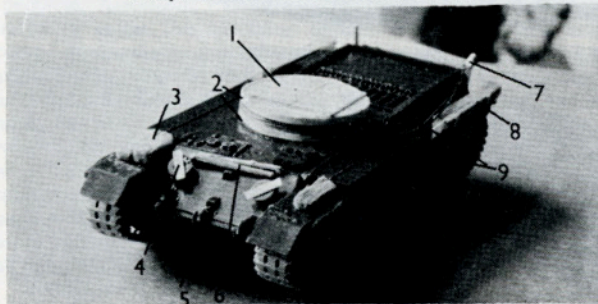
Chris
Ellis



WITH beginners specially in mind, this month's military conversions are chosen particularly for their simplicity. In addition, it is some time since we last dealt with Centurion conversions in these pages and the early versions covered here should appeal to those who model the post-war military scene. The Centurion II ARV is of special interest, being a very primitive attempt at producing an ARV on this chassis; only very few appear to have been built, and it was little more than a towing vehicle. The Centurion III could retain its stowage boxes and muzzle brake if desired, the vehicle modelled being unique to 5 RTR who also fitted the long range fuel tank on the back of their vehicles. Finally, the Soviet DUKW is a conversion I've meant to include for some time. Built by GAZ, the Soviet Army still use these vehicles in some numbers. They are 'carbon copies' of DUKWs supplied under Lease Lend and put into production in 1945 with the addition of a stern ramp and lengthened cargo hold enabling guns up to 57 mm to be transported.



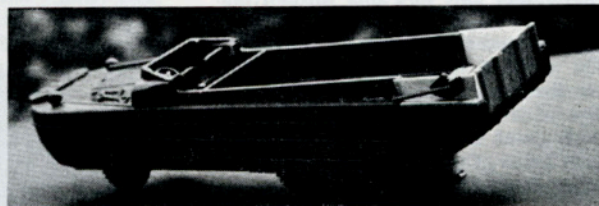
Centurion III. Assemble according to kit instruction sheet except for modifications numbered above. **Key:** (1) When assembling chassis omit outer half of rear return roller each side. (2) Cut three skirt supports for each side, 8 mm x 1 mm, from plastic strip and cement one in front of each bogie in positions shown. (3) Cut 'fishtail' ends from exhaust manifolds and re-cement in vertical position. (4) Remove telephone and first-aid box mouldings from hull backplate and make 18 mm wide fuel tank by wrapping 10 thou plastic card round pencil, then squeezing into oval cross-section and cementing card oval at ends. (5) Add spare wheel, if desired, on left side of glacis plate. (6) Fill in stowage box locating holes with scrap plastic and file smooth. (7) File off fume extractor from barrel. (8) File off muzzle brake. (9) Mantlet escape hatch central on turret rear.



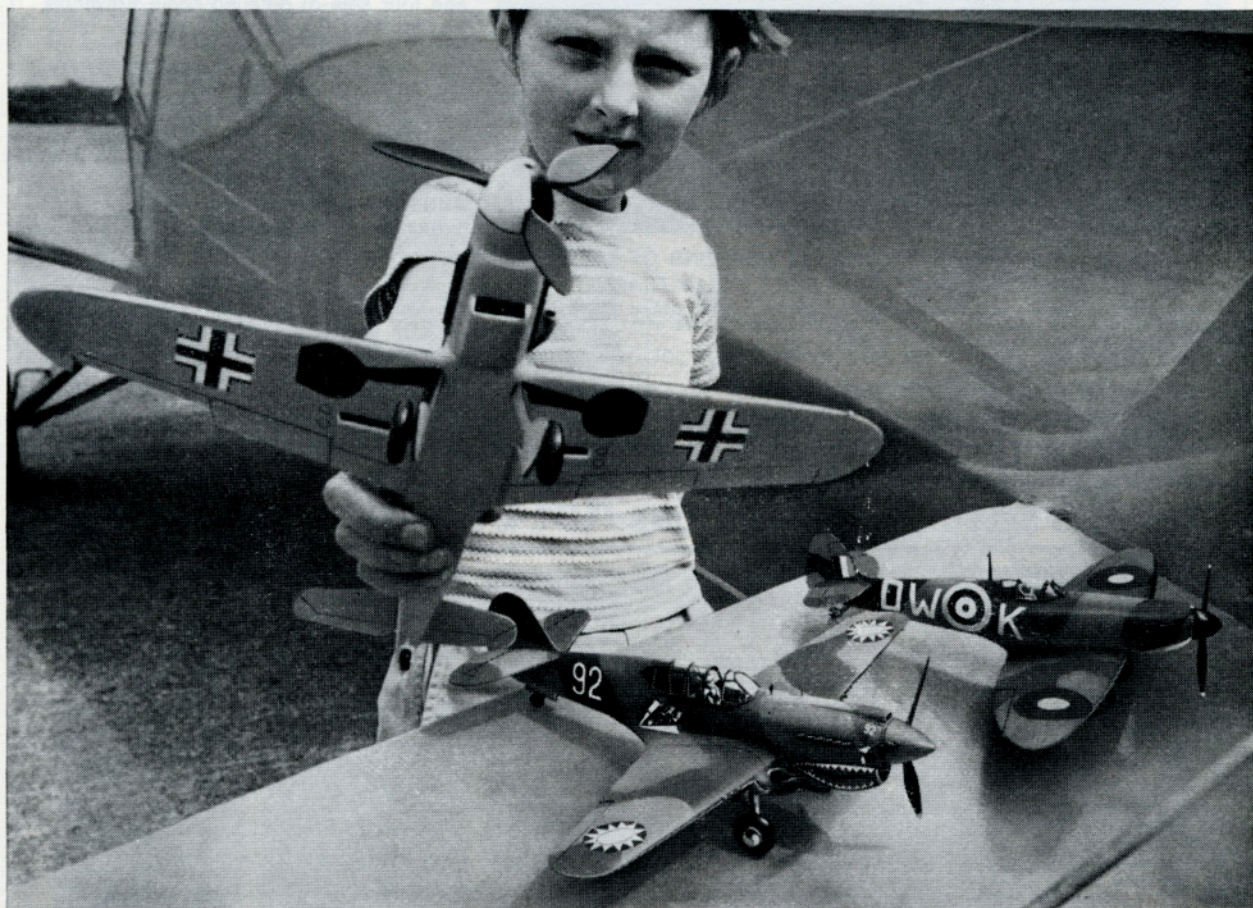
Subjects of this month's military models are (top) a Centurion III of 5 RTR in 1954 showing the extra petrol tank at rear, absence of stowage boxes on turret, and muzzle brake removed; (above) very rare view of the Centurion II ARV at Osnabruck in 1952 in use by 'C' Sqn 3rd Dragoon Guards. Note green/black camouflage, REME red/yellow/black flash with serial '45', 6th Armd Div formation sign, and 'C' Sqn marking on stowage box (both pictures by G. Clark).

Centurion II ARV. Assemble hull following kit instructions, but modifying as in stages 1-3 for Centurion III. **Key:** (1) Cut out 24 mm diameter disc from 30 thou plastic card—using compasses for circle—and 5 mm wide strip from 10 thou plastic card. Cement latter round edge of disc to form superstructure sides. (2) Cut out 2 mm wide strips of paper and cement round base and below rim of superstructure respectively. Cut out 18 mm (wide) x 14 mm rectangle of plastic card and score centrally fore and aft; cement on superstructure roof to depict hatches. (3) Timber baulks on front mud-guard from 12 mm long balsa strips. (4) Purchase blocks from spare return rollers with frames from plastic strip. (5) Add extra tow hook centrally on glacis. (6) Tow bars cemented across glacis plate, from scrap plastic. (7) Kingposts cemented at rear corners of hull from 8 mm x 2 mm plastic strip. (8) Timber baulks from 30 mm long balsa strips. Plastic strips 3 mm high as retainers. (9) Tow rope led forward from kingpost and tow rope wrapped round superstructure, both from thick thread.

Soviet-built DUKW (below): As is clear from the picture, this is a very simple conversion which entails cutting away the rear of the upper deck moulding to match the width of the existing cargo space, cutting away the rear of the hull to match width and depth, and extending the cargo floor and sides back to the rear of the vehicle using 30 thou plastic card. Take care to maintain the 'slope' of the cargo space sides when cutting out the plastic card extensions. A rectangle of plastic card is then cemented in the open end of the modified vehicle to depict the hinged rear ramp. Three strips of card represent the ribbing. The driver can be modified to represent a Russian soldier by filing away his breast pockets and filing the beret to forage cap shape. Colour: dark green.



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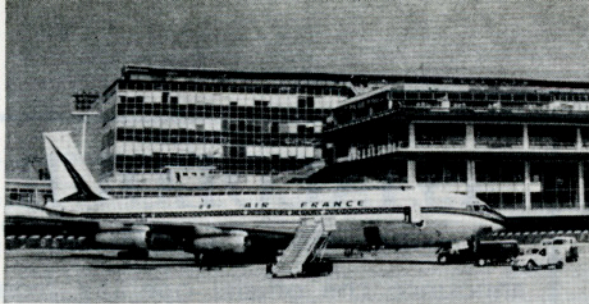
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THOUGH I have earned my living in aviation for the last ten years my purely commercial interests in the subject have, I hope, not outweighed my enthusiast's desire to follow anything that has wings which was fostered some 30 years ago at the pre-war Hendon Air Displays. As a spotter with more than an average interest in the modelling world I still seize every opportunity to visit airfields, fly, or be as close as possible to aeroplanes both large and small, civil or military.

Like any other enthusiast I have always wanted to visit the United States to see something of that country's tremendous aircraft industry and the opportunity presented itself when I was able to go on an inaugural flight to New York last month at the invitation of Air France. Naturally I was determined not to waste a minute of my five day stay and this and next month's *In The Air* will therefore be given over entirely to my American visit which, with the wholehearted co-operation of many individuals, has been one of the more exciting highlights of my life in aviation.

The trip started at the gentlemanly hour of ten in the morning when the doors of the Air France Boeing 707 *Sierra Oscar* closed on the outside world and the aircraft was backed away from one of the new Heathrow piers to take its turn in a seven aircraft queue for the 35 minute first leg of the journey to Paris (Orly) from Heathrow's 28L. The noise abatement climb at full power to 2,000 ft clearing Windsor took the aircraft quickly to 25,000 ft where Dunsfold and Brighton slipped by under the starboard wing within ten minutes. A further ten minutes at cruise altitude was followed by a gentle descent onto the Orly approach pattern and by 11.30 I was in the transit lounge of France's principal international airport.

I was booked on Flight AF047, another of Air France's Boeing 707 fleet, which left Orly exactly at 12.30 local time for Shannon. Air France have recently been doing the profitable stop-over in Ireland during the summer months and apart from its attractions for the local commuter passengers between the two countries it did break the journey and provided a glimpse of a duty free airport whose departure lounge equals the best in cut price supermarkets anywhere in the world.

Shannon Airport and an area about one and a half miles all round is without any form of Customs or import duty. The many factories that surround the airport are able to export their goods remarkably cheaply. Imports too are without tariffs and I ogled at the best known brand names in cameras, watches, perfumes and other luxury goods at well below half the UK price.

The arrival was heralded by the Limerick Pipe Band which lined up as the aircraft's doors opened on to a wet and wind-swept airport. Unfortunately the apron was devoid of aircraft apart from a TWA 707 and an Aer Lingus Viscount. Shannon's pre- and immediate post-war popularity as the jumping off point for transatlantic flights by both aircraft and flying boats has unfortunately waned since the introduction of aircraft like the DC 7C and the later jets

with their full trans-Atlantic capability.

The seven hour flight from Shannon to Kennedy Airport, New York could have been very boring indeed, even for one who delights in getting his feet off the ground more than most. With little to see from 30,000 ft apart from low cumulus cloud, even if one gets a window seat, there is very little to do and although the passenger accommodation is very comfortable one inevitably gets fed up with being so long in a rather confined space.

Air France, like several other transatlantic carriers have recently introduced In-Flight Movies to combat this boredom. Each passenger seat is fitted with a nine-channel control knob and earphones. The occupant can have a selection of seven different programmes ranging from classics to the best in pop. Two channels are reserved for the sound track (French and English versions) of a feature film.

Naturally all the music is on tape and a very compact transistorised form of tape recorder is mounted in the electronics bay in the flight deck. The music is continuous and the listener can switch from pops to classics at will.



The film show lasts about two hours and the capacity audience on Flight AF047 were entertained to the Academy Award winning film *A Man and Woman*. Sufficient for me to say that it made a very welcome and interesting break to the flight. Two screens are mounted one at the flight deck end of the cabin and the other half-way down the aisle. Similarly two roof mounted projectors are employed and the sound track is synchronised through the earphones. Sixteen millimetre projectors are used and the film, on a continuous strip, is contained on two of the largest reels I have ever seen. Measuring about three feet six inches in diameter, these and the rest of the equipment fits snugly into its ceiling mounting and is again controlled from the flight deck. Passengers pay £1 for the earphones, in accordance with IATA regulations.

One of the problems encountered by the manufacturers of these film units was obviously that of allowing all viewers to see the screen. These are not very large and the height of the backs of the seats does rather get in the way especially to those sitting near the windows. Inevitably a small part of the picture is lost unless one sits upright on the edge of the seat for the whole two hours. One other problem is that of lighting. The window blinds have to be closed or otherwise

Below: The 707 in flight. **Top right:** In-flight movies in mid-Atlantic.





the brilliance of the sun at altitude spoils the picture.

There's no doubt about it, with two excellently served meals, complimentary drinks, the music programmes and the In-Flight Movie, seven hours flying time goes very quickly. Before I realised it, *Sierra Oscar* was over the Labrador coast and descending into the maze of airways along the United States eastern coast line. The final descent started as the aircraft came abreast of Boston and after about 10 minutes holding off in the stack the flaps and wheels went down, air brakes out and the aircraft touched down at Kennedy just seven hours after leaving Shannon and five hours behind GMT making the local time five o'clock in the afternoon.

New York's international airport is large by any standards. I counted 24 Boeing 707s, 18 DC-8s, 3 VC 10s and a brace of Coronados representing the world's inter-

national carriers within a few minutes of passing the aircraft stand areas. Mixed in with these were many Boeing 727s, DC-9s and a handful of BAC One-Elevens. Executive aircraft of the 'medium twin' size were everywhere.

Unfortunately I wasn't allowed to look for long as the passengers were hustled into Customs and Immigration. Clutching luggage and passport with visa, landing documentation and vaccination certificates I went with several thousand other travellers past the eagle-eyed scrutineer at the Immigration Desk and on to the Customs man who although he didn't have a semblance of Royal Navy uniform and gold braid on his sleeve just like those on the UK side of the Atlantic, asked just as many questions probing about in my camera bag and personal belongings looking for contraband.

Having experienced air travel in many shapes and forms I thought that the American version, compared with Heathrow, lacked the orderly precision that we have come to expect from the latter. Admittedly there were many more people to deal with but the walk from one place to another before getting to the airport buses was longer and there were fewer directional signs to indicate where one should go. There appeared to be a lot more confusion than at Heathrow even though the American airfield was built more recently.

Travelling over and a hotel room secured, (at a price! American charges are much higher than in the UK and that doesn't include breakfast), I had to adjust myself to the local time as it was only eight o'clock and by rights I should have been in bed for several hours. The lights of New York were, however, very tempting and I finally went to bed very late and very tired but ready to carry on with the rest of the venture. But more about that next month.

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THE CHURCHILL TANK

by
Peter
Chamberlain



PART 6

SPECIAL PURPOSE VARIANTS

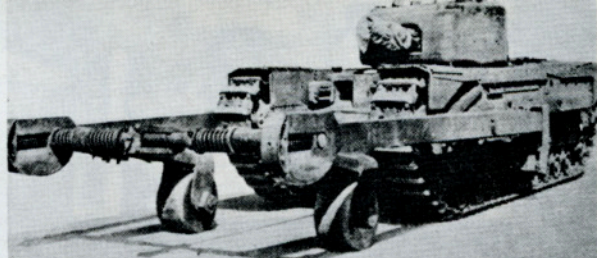
TANKS with anti-mine roller devices were not intended to act in the capacity of minesweepers but were designed to protect other tanks (eg, flails) fitted for mine clearing against undetected mines and to assist tanks to cross small minefields. The rollers were positioned in front of each track of the vehicle using the device with the object of protecting the track, but it did not clear a broad enough path for other vehicles to follow. Various anti-mine roller devices were tested on the heavily armoured Churchill, some of them being put into limited production.

Anti-mine roller devices were originally projected about 1937, prototypes being made by the firm of J. Fowler & Co of Leeds. One of these constructed by Messrs Fowler was tried out on a Medium Dragon Mk III/L and consisted of four rollers trailed, two in line with each track, from a frame attached to the vehicle. Development continued throughout the period 1937-1943. Known as Fowler rollers the official designation was Anti-Mine Roller Attachment (AMRA). In order to indicate the small variations or modifications that had to be incorporated in the device so that it could be fitted to different types of tanks, the following nomenclature was used:

AMRA Mk Ia for Matilda, AMRA Mk Ib for Valentine, AMRA Mk Ic for Covenanter, AMRA Mk Id for Crusader, and AMRA Mk IIe for the Churchill. The device consisted of a framework and suspension carried on spring-mounted and castoring rollers positioned in front of each track. It was attached to the tank by two brackets bolted to each side of the tank as shown in the accompanying diagram. When



Early prototype of the 16 inch CIRD as fitted to the Churchill AVRE; compare with heading picture (Imperial War Museum photo).



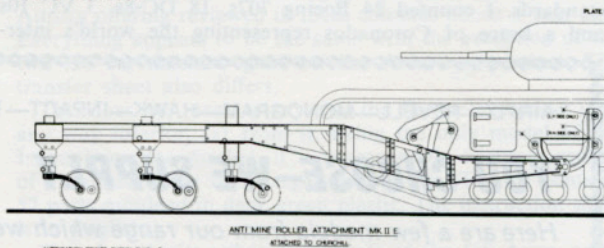
Top: Production 16 inch CIRD fitted to Churchill AVRE.



Above: The experimental 21 inch CIRD with final design of side arms. **Drawing below:** The AMRA Mk IIe device attached to a Churchill.

more than one roller had been blown off, the AMRA could be jettisoned.

AMRA Mk IIe: The Mk IIe device varied in basic design to the Mk I series, in that it had double roller forecarriage assemblies in place of single roller assemblies, this being due to the wider nature of the Churchill track. To guard against the possibility of the double rollers passing one each side of a mine the gap between the rollers was covered by a cast steel wheel called the 'Disc Coulter', one of which was fitted each side behind the roller assemblies. The weight of the Mk IIe device was 55 cwt compared with 30 cwt of the Mk I device.



CASTOR ROLLER DEVICE

The Anti-Mine Reconnaissance Castor Roller Device (AMRCR) was a heavier and modified version of the AMRA, and was tested in July, 1943. After extensive trials a limited amount were put into production. Like the AMRA, this was a perambulator device attached to, and pushed in front of, the tank. The device consisted of a framework and suspension carried on spring-mounted and castoring rollers positioned in front of each track.

Four rollers, two in line with each track, were carried on an axle supported at either end by quarter-elliptic leaf springs clamped to a transverse swivel axle immediately in front of the roller. This swivel axle was mounted at its centre on a vertical spindle, so as to have limited rotation about a longitudinal axis. The complete assembly was attached to the tank by two brackets bolted to each side. A release gear that could be operated from within the tank was incorporated. The weight of each roller was 16 cwt and the total weight of the device was 5 tons 4½ cwt. The AMRCR No 1, Mk I, could be fitted to all marks of Churchill, and the No 1A, Mk I, was adapted for attachment to the Sherman V (M4A4).

A scheme was later developed by which the AMRCR

AIRFIX magazine

could be towed behind the vehicle when not required for its normal use in front of the tank.

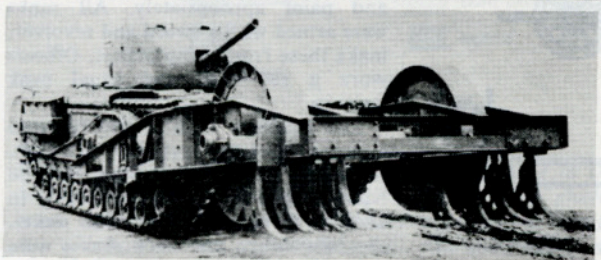
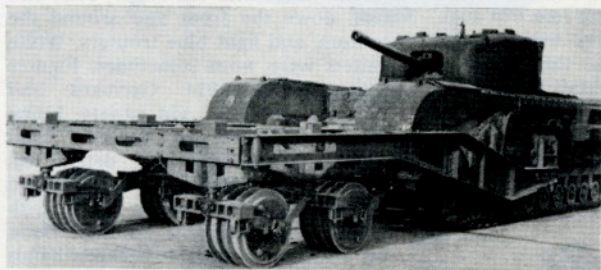
THE CIRD

The CIRD (Canadian Indestructible Roller Device) was initiated by the Canadian Army, the prototype being built in 1943 at a Canadian Army workshop in the UK. It was a heavy type of roller designed to rotate about a bar after exploding a mine. Various sizes of roller were tested, but the CIRD was not developed in time to be produced in quantity before the end of the war.

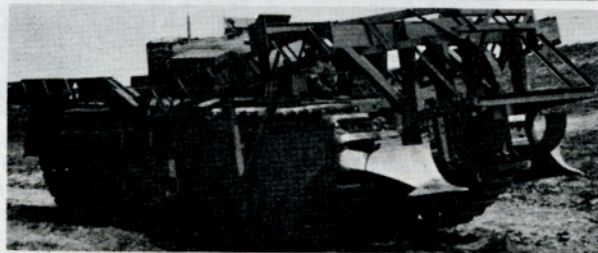
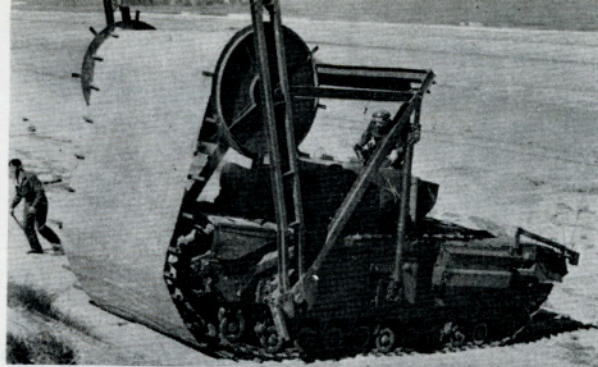
The CIRD followed the same principle as the AMRA and AMRCR, being a perambulator device attached to and pushed in front of the tank. It consisted of two rollers which were attached by their axle-pins to separate forks, bolted and welded in each case to a roller arm. Each roller was positioned in front of either tank track. The roller arms were located by two springs on a cross-bar which was mounted in two side arms, each secured to the hull by a fulcrum pin which, in turn, was mounted on a fulcrum bracket attached to the hull of the vehicle.

When a roller passed over a mine—which it detonated by its weight—the blast from the explosion threw the roller up into the air causing it to perform an arc about the cross-bar. This circular movement sent the roller in front of the cross-bar and the spade end of the roller arm dug into the ground. The forward movement of the tank forced the spade to act as a pivot or sprag and the cross-bar momentarily rode on the spade point forcing the cross-shaft and side arms to lift so that the roller returned once more to its normal trailing position.

CIRD 16 inch: Preliminary development of this device took place in the summer of 1943. It was conceived by General Worthington, commander of the 4th Canadian Division and developed by Col Inglis in conjunction with the Obstacle Assault Centre (OAC). By October, 1943, a prototype on a Churchill tank was tested, this device having two solid armour plate rollers 26 inches in diameter by 16 inches wide and weighing one ton. In the following December a similar device was tested on a Sherman tank.



Top: The AMRCR device which was an improvement on the original AMRA. **Above:** The Farmer Track which was also described last month.



Top: The Churchill Bobbin Mk II showing the method of laying the carpet. **Above:** Farmer Deck plough was distinguished by lattice construction of arms. Both these types were described last month (Imperial War Museum photos).

CIRD 15½ inch: Serious defects occurred with the 16 inch rollers, chief among them being the drooping of the side arms and the spreading of the rollers on mine detonation so that they jammed in the saddle and would not rotate. It was decided to reduce the width of the rollers from 16 inch to 15½ inches, and this took place in June, 1944.

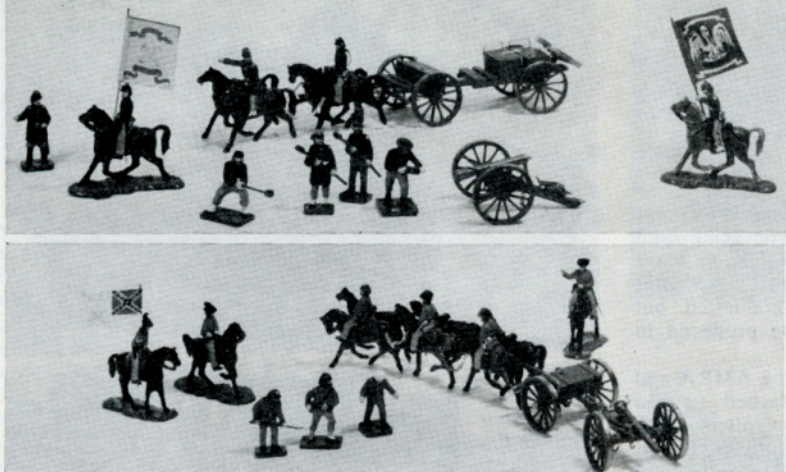
CIRD 18 inch: In order to improve mine detonating, efficiency trials were carried out on rollers 28 inches in diameter by 18 inches wide, running on 5 ft diameter axles and weighing 3,000 lb. These were approved for fitment to the Churchill device in August, 1944. New redesigned side arms were also fitted. The 18 inch CIRD was also adapted for the Sherman tank.

CIRD 21 inch: As it was considered that an even heavier roller than the 18 inch wide one might give improved protection to the 22 inch wide track of the Churchill tank, tests were initiated in November, 1944, on a roller 21 inches wide by 30 inches in diameter and weighing 4,100 lb. As this 21 inch roller showed little improvement over the 18 inch roller and also imposed a strain on the engine clutch, tests were terminated in May, 1945.

This concludes the long list of plough and roller devices which were hung on the front end of the surprisingly adaptable Churchill during the second world war. In 1945, however, a further adaptation produced the Churchill Flail which became the standard British mine clearing tank of post-war years. This will be described later.

NEWS FROM IPMS

THE IPMS National Modelling Contest will take place at Maple & Company's Restaurant, Tottenham Court Road, London W1, on Saturday, November 25, 1967. Doors will be open at 4.30 pm and all members and friends are invited to attend this event. The next meeting of the London Area Group will be on Friday, November 24, at St Mark's Church Hall, Balderton Street, London W1. Midland Branch meetings are now held on the first Friday of every month at the YMCA, Snow Hill, Birmingham. The Area Secretary, Mr Ron Adams, will be pleased to welcome members and friends at these meetings.—L.G.V.



Top: (Back row) Union artillery officer, Union artillery standard bearer, artillery caisson and limber with four horse team (Union artillery), Washington Artillery (Confederate) standard bearer. (Front row) Union artillery crewmen and 'Napoleon' gun. **Above:** (From left) Stuart Horse Artillery standard bearer and mounted crewman, Confederate gun crew, Confederate artillery six-horse team, limber, and 'Napoleon' gun, and mounted officer.

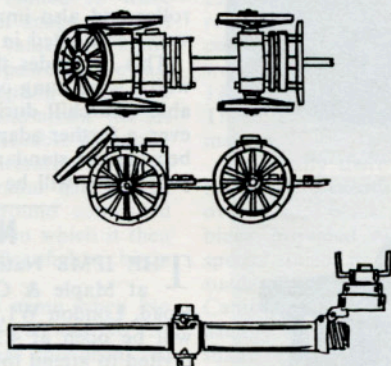
US CIVIL WAR

Michael Blake models the artillery

BOTH North and South used the same basic artillery pieces. The most famous was the 12-pounder Gun Howitzer Model 1857, 'Napoleon', smoothbore. To make this gun from the Airfix Civil War Artillery, the stock must be shortened by 6 mm. Reshape the new end and stick the towing ring on. Shorten the barrel by 2.5 mm and 'bell' the muzzle with UHU. Cut the cheeks to 14 mm, and 10 mm apart on the trail push short pieces of bent pin for prolonge hooks, and coil some 'rope' (thread) around them. Add a wire loop handle to a bucket from the Airfix Wagon Train set and hang on another piece of bent pin centrally under the axle. Make handspikes from 18 mm lengths of pin. Place loops from bent wire, two on each cheek for handspikes. A rammer/sponge and worm were carried in hooks on the axle with loop of chain on the stock. Make the former from 27 mm lengths of wire with ends from sprue. A lock chain hung under the stock. Use marine model chain for this.

Next the limber. Remove the solid foot board from the Airfix model, and cut it in half. Cut one half in half again, and stick a half and a quarter back in their original positions with the narrow piece near the chest. Replace ammunition chest handles with new ones 3 mm high made from wire,

stuck on the sides. Hang a grease bucket under the axle from sprue. Each artillery piece was accompanied by a caisson and limber. The latter was the normal limber, but for the caisson, cut the cheeks level with the stock on an Airfix cannon. Stick a balsa frame 29 mm long by 18 mm wide on the stock. Make two ammunition boxes from balsa and stick these on the frame. Under the rear box stick a short piece of balsa between the cheeks. Make a hole through this, insert a length of cocktail stick at an



Top: Plan and elevation of limber and artillery caisson, made as described in text. Use Airfix wheel diameter and limber dimensions to give overall size for model. **Above:** Armstrong breech loader detail.

angle and place a spare wheel on it. Another bucket hung from the caisson axle. Make foot boards from balsa, sizes as for limber. Tarpaulins were carried on all ammunition box tops, held in place by two leather straps.

Amongst the breechloaders used was the Armstrong hexagonal-rifled bore. For the 12-pounder version the curved end is cut from the Airfix barrel, taking care to leave the elevating rod in place. Add a new breech 2 mm long made from sprue, with wire handles. The stock is the correct length. The normal equipment was carried, as described above.

Smooth bore pieces were usually bronze, and rifled pieces were cast iron. Finishes on the wooden parts varied; some were grey, some brown, and some green. Humbrol matt grey-green is a good compromise.

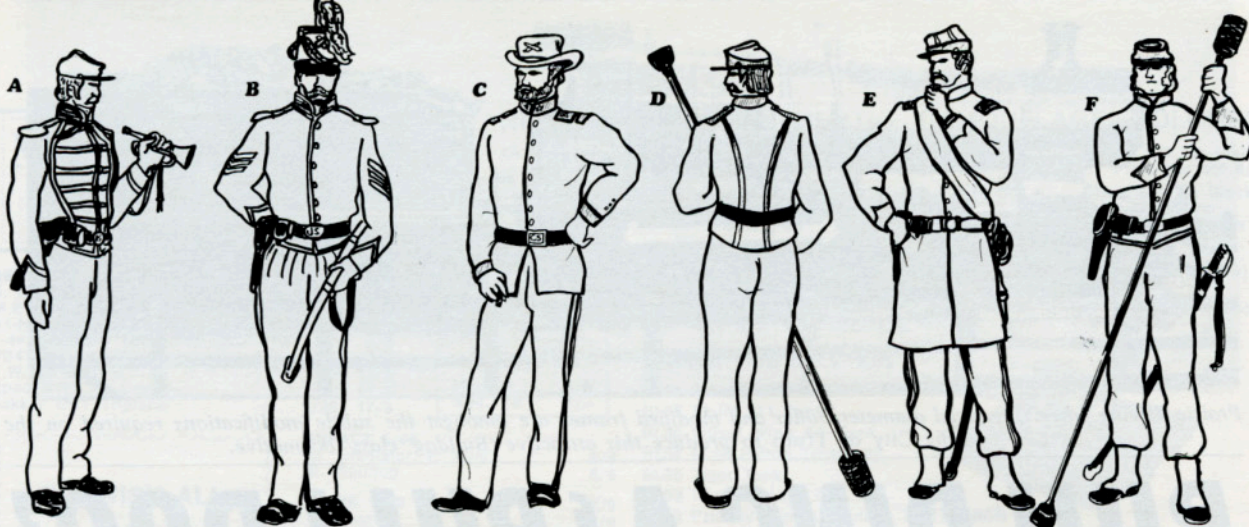
Usual team was six horses, but four were used extensively, especially in the South. Modify the Airfix team by cutting the Airfix pole to 35 mm. Rig was wheelpair to pole by breast and breech straps; swingpair to breast strap of wheelpair; leadpair (if used) to breast of swingpair. Drivers rode nearside horses, with personal effects in valises (made from sprue) on off-side horses. Gun crew usually walked alongside, unless the unit was designated horse artillery when they were mounted. Riding on limbers was reserved for emergencies.

Uniforms: Confederate

Confederate gunners wore the short 'shell' jacket with red collar, cuffs and trim down the front and around the bottom, and light blue trousers. White gaiters were worn sometimes. Figures from Airfix 1914 Germans and American Marines add variety. Using the flamethrower or bazooka shell holder, trim unwanted detail, eg, flamethrower pack, nozzle, uniform pockets, etc, and swop heads with Union or Confederate infantry. Build up a round or rammer between hands and paint appropriately. All ranks were armed with a sword and revolver; make these from scrap plastic. Officers wore a red sash and usual rank insignia.

The Madison Light Artillery wore a variation of the regulation uniform. Kepi was grey with red crown and band shaped to a point at front. In addition to normal red trim on jacket, shoulder straps and back seams were red. A brass crossed-cannon badge on kepi crown, and regulation trousers were worn.

Washington Artillery of New
AIRFIX magazine



Civil War uniforms and regiments. Key: A—Union artillery bugler. B—Union light artillery—sergeant, full dress. C—Officer, Rutledge's Battery (Confederate). D—Gunner, Madison Artillery (Confederate)—note seam strips. E—Officer, Washington Artillery of New Orleans (Confederate). F—Confederate artillery, regular gunner. All colours described in text.

Orleans wore a striking uniform. Give the Airfix gunners gaiters and frock coats (built up from Barbola) to just above the knee. Coat was dark blue, with red collar and cuffs. Trousers were light blue with red stripe, and gaiters were white. Kepi was red with a dark blue band, and yellow seam trim and french knot on the crown. Paint on the brass shoulder scales. NCO's chevrons were gold with red trim. Officers wore a red sash over the right shoulder to the left hip; dark blue jacket collar and cuffs; Union type red shoulder bars trimmed in gold; and 'chicken-guts' on sleeve. Trouser stripe was red/gold/red. After Mannassas, officers abandoned the gaiters and shoulder sash, and gunners wore blue denim fatigues.

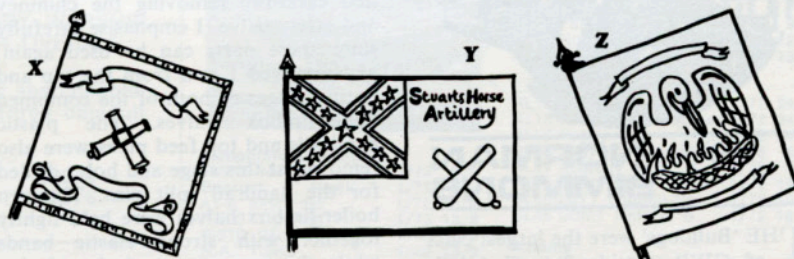
Jeb Stuart's famous Horse Artillery which accompanied his cavalry wore regulation dress except that the slouch hat with black plume was favoured.

Rutledge's Battery of 1st Tennessee Light Artillery wore an all grey jacket and trousers, with red collar, shoulder straps, cuffs (not 'V' shaped) and trouser stripe. Headgear varied and included white trimmed hats. A brass crossed-cannon badge was worn on front of hats and on shoulder straps. Some officers did not wear sashes or 'chicken guts', only collar badges.

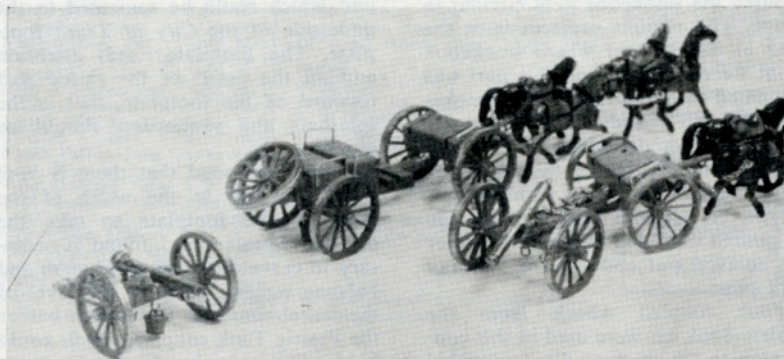
Uniforms: Federal

Regulation dress was dark blue shell jacket, dark blue kepi, light blue trousers with red trim on collar, down front, around bottom, around cuffs and on back seams. Large brass shoulder scales, and a revolver and sword were worn.

Full dress hat for the Artillery Corps was the shako. This can be



Artillery flags of the US Civil War. Key: X—US Artillery (Union) regimental flag. Y—Stuart's Horse Artillery (Confederate). Z—Washington Artillery of New Orleans (Confederate). All colours given in text.

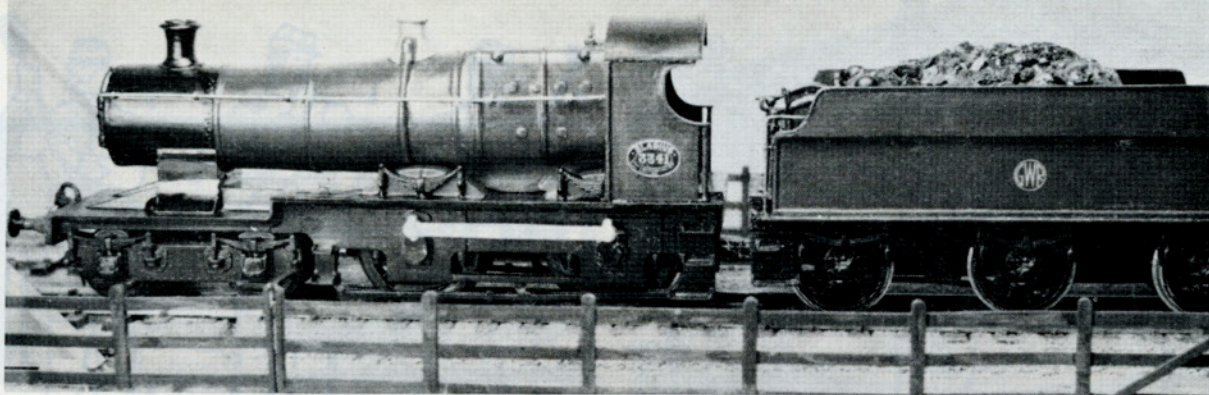


Close view of Civil War artillery equipment modified from standard Airfix items. Left to right: Armstrong breech loader, caisson and limber, and 'Napoleon' gun and limber. Note addition of hooks, buckets, rammers, etc. as described in this article.

made by cutting the Airfix gunners' kepi level with the peak and sticking on a 2.5 mm deep piece of sprue with UHU. The horsehair plume is made from Barbola on a short support made from a pin. Shako was dark blue with red cords (made from cotton), black plume, and brass crossed-cannon at front. US Light Artillery full dress had 'Chasseur' style trousers pleated at waist. The pleating can be indicated by painting with a shade darker blue than the trousers. The shako had a red plume.

Flag bearers can be made from the artillery outriders by inserting a wire flag pole through the hand, or the Airfix 7th Cavalry flagbearer can be

Continued on page 137



Prairie driving wheels, reduced diameter boiler and modified frames are amongst the subtle modifications required on the Airfix City of Truro to produce this attractive 'Bulldog' class locomotive.

BUILDING A 'BULLDOG'



BY **NORMAN SIMMONS**

THE 'Bulldogs' were the largest class of GWR outside framed 4-4-0's and 156 were built during the period 1899 to 1910. Despite withdrawals beginning as early as 1929 and continuing through the nineteen-thirties, over 50 survived World War 2 and the last one remained in service until November, 1951.

After the 1912 renumbering scheme the class were numbered 3300-3455. It is, however, important to pick the period and locomotive number correctly as there were distinct variations in the class. The very first ones to appear, for instance, had domed parallel boilers and throughout their life, numbers 3300-40 had curved frames. Eventually, however, they were all fitted with tapered boilers, the majority of them Standard No 2, and for most of their life, in outline at least, the 'Bulldogs' roughly resembled a small boilered 'City' with 5 ft 8 inch instead of 6 ft 8½ inch

coupled wheels.

This, therefore, is the main task of this month's conversion; to fit 5 ft 8 inch driving wheels to the *City of Truro* and convert the Standard No 4 boiler in the *City of Truro* kit to a Standard No 2. Both boilers and fireboxes are exactly the same length but the Standard No 2 boiler is 6 inches smaller in diameter. I tackled this by first carefully removing the chimney and safety valve (I emphasise carefully since these parts can be used again) and removed 1 mm from the top and bottom edges of both of the combined boiler-firebox halves. The plastic handrails and top feed pipes were also removed at this stage and holes drilled for the handrail split pins. The two boiler-firebox halves were held tightly together with strong elastic bands while the cement was drying during assembly, and two 17 mm diameter discs of 30 thou plastic card cemented inside at either end of the smokebox ensured the smokebox kept circular in shape. The various projections at the rear of the *City of Truro* smokebox front were removed and this part was cemented to the outside of the smokebox. As well as reducing the diameter to the correct dimension it also had the effect of lengthening the smokebox which appears to accord with the prototype. A cellulose filler mixture can be poured in to add weight and anchor the splayed out ends of the handrail split pins.

Four coupled wheels from the *Prairie Tank* kit were used in this conversion to which were fitted extended axles cut off from *City of Truro* coupled wheels. Knowing from experience gained with the 'Aberdare' conversion how important it is to fit these

extended axles perfectly central on the wheel centres and knowing how much more difficult it was going to be without the central locating pins on the *Prairie Tank* coupled wheels, unlike the tender wheels I used in the 'Aberdare' conversion, I decided to avoid outside bearings for the axles and construct instead a pair of inside frames. For these inside frames I used a pair of spare *City of Truro* outside frames left over from previous conversions and they were assembled with their backs against the inside of the wheel and the detail side facing inwards. The front and rear steps and brake rigging were removed and the axle holes checked against each axle to ensure frictionless running. Four frame spacers 11 mm wide were cut from 30 thou plastic card and cemented between the frames, one either side of each of the two strengthening plates moulded on the frames. The resulting inside frame chassis made a very rigid unit which could be cemented to the underside of the *City of Truro* footplate. The footplate needs attention and all the detail of the raised part forward of the footplate, that is the splashers and sandboxes, should be removed.

It will be found that there is very little clearance in the width of the holes in the footplate to take the coupled wheels and I found it necessary to carve the crank pin bosses and balance weights down to the level of the wheel rims and the spokes before the *Prairie Tank* coupled wheels could be made to revolve freely. I recommend fitting the outside axle extensions by inserting plastic or wooden dowel pins part the way into the back of the extended axles and into holes

drilled in the centre of the wheels. It is important, of course, to get these holes drilled dead centre and a lathe helps tremendously. If you can't beg or borrow the use of one, it is a bit of a gamble. However, with the wheels revolving fairly and squarely in the inside frame chassis, 100% accuracy with the extended axles will not be quite so important. Be as careful as you can, though, as otherwise the coupling rods will bind. Assembly of the complete chassis should begin by placing the wheel halves through the inside frame axle holes and cementing them together. Next cement the inside frame unit to the underside of the footplate. Now check that the outside frames fit properly and open out the axle holes should there be any wobbling of the extended axles. Cement the outside frames in place and fit the eccentric cranks and coupling rods as normal.

Allowance must be made for the reduced height of the footplate due to the use of smaller diameter coupled wheels and this affects the front bogie, the front buffer beam and the brake rigging. The splashers, previously removed from the footplate, should be reduced in height to 4.5 mm at their centres. As a consequence they will be shorter in length and the openings in the footplate will need filling in before the splashers are replaced. The sandboxes can be salvaged and re-used and, of course, the outside springs can be fitted as standard. The cab can also be fitted without modification.

The boiler sides need patching up with plastic putty to fill in the depressions designed to clear the *City of Truro* splashers and nameplates. The safety valve should be refitted with its centre line 34 mm from the rear of the firebox. This is further back on the boiler than the point from where it was removed. New top feed pipes need to be fitted and these can be knocked up out of a variety of materials such as wire, plastic sprue heated and stretched to the right diameter, or even rolled up plastic putty. The smokebox saddle needs building out at the base to match up with the footplate and I recommend covering up the ugly join where the two parts meet by a strip of 10 thou plastic card.

The centre line of the chimney should be 12 mm from the front of the smokebox. It is at this point that one must start considering individual locomotives since two distinct types of chimney were fitted to these locomotives; basically the 34XX series had

copper capped chimneys and for this type we can refit the Airfix *City of Truro* chimney, and the 33XX series had cast iron chimneys. I recommend using a K's 43XX chimney to represent the cast iron variety.

The Model Railway (Mfg) Company Ltd, 14 York Way, Kings Cross, London N1, do a wide range of name and numberplates for the 'Bulldogs'. There are none, unfortunately, for the curved frame variety which I would like to cover in a future article but there are so many for the straight framed locomotives that I haven't space to mention them all. It might suffice if I mention all those that survived the war, therefore lived the longest and can cover the widest period on your layout. These are as follows:

3341 <i>Blasius</i>	3400 <i>Winnipeg</i>
3363 <i>Alfred Baldwin</i>	3408 <i>Bombay</i>
3375 <i>Sir Watkin Wynn</i>	3417 <i>Lord Mildmay of Flete</i>
3376 <i>River Plym</i>	3418 <i>Sir Arthur Yorke</i>
3379 <i>River Fal</i>	3430 <i>Inchcape</i>
3391 <i>Dominion of Canada</i>	3455 <i>Seagull</i>
3395 <i>Tasmania</i>	

Two of the above require special mention. 3341 *Blasius* is one of the combined cabside name and numberplates carried by numbers 3320-60. They make a change from the normal type of GWR plates and they have the added advantage of being a few bob cheaper—5s 3d as opposed to 8s 9d! If you write to the firm for an order don't forget to include a stamped and

addressed envelope and mention AIRFIX magazine. 3453 *Seagull* is one of the final fifteen locomotives numbered 3441-55 and all named after birds. Their frames were deeper than other straight framed 'Bulldogs' and I hope to mention them in detail in a later article. It only remains for me to say that in GWR days the 'Bulldogs' were painted in unlined green livery.

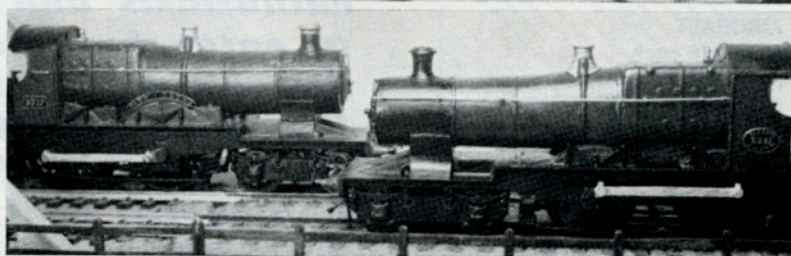
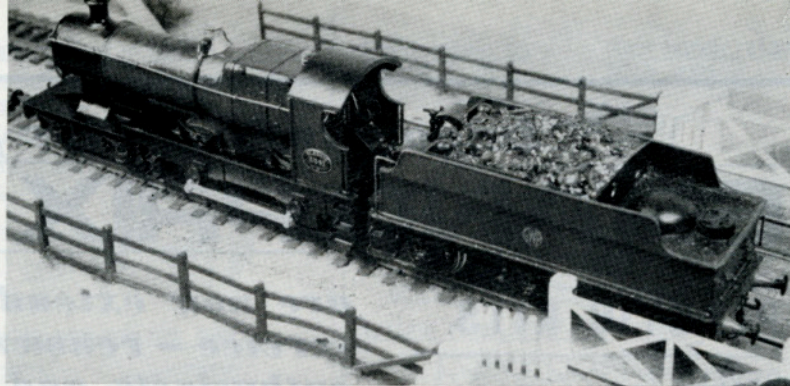
Civil War—from p. 135

used, modified to the regiment of your choice as outlined above.

Union Regimental flag was yellow with gold scrolls bearing the unit's name, brass crossed-cannons, and gold fringe. Battery Guidons were scarlet with gold crossed-cannon and regimental number above and battery number below; or swallow-tailed with stars and stripes like the cavalry standard illustrated last month.

The Confederate Artillery battle flag was 36 inches square (11 mm). Stuart's Horse Artillery carried '2nd National' with their name and brass crossed-cannon. One standard carried by the Washington Artillery of New Orleans was red with a diagonal blue cross on one side and the Louisiana state emblem of Pelican and brood on the other.

Union buglers wore red trim on their jacket fronts as for Infantry musicians. Buglers can be made from artillery outriders or the Airfix 7th Cavalry bugler can be used.



Top: Another view of the 'Bulldog' conversion shows the locomotive with wire handrails fitted, and tender with K's motorised chassis unit and modified to 3,500 gallon type as described in our June, 1967, issue. **Above:** The 'Bulldog' compared with the original City of Truro model.

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H.645	Fokker Eindecker
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H.612	Messerschmitt ME-109
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H.619	Mustang P-51D
H.620	Hawker Tempest
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NEW BOOKS

REVIEWED FOR MODELLERS

Marking time

AIRCRAFT MARKINGS OF THE WORLD 1912-1967, compiled and written by Bruce Robertson. Published by Harleyford Publications Ltd, Letchworth, Herts. Price 70s.

THIS in many respects is an unusual book in its layout. It is packed with photographs and at first glance appears to have been edited in a complicated manner. It deals alphabetically with each country of the world, discussing why certain markings and colours have been or are adopted by both civil and military aircraft. Its theme is more of the 'Why' than 'What' where markings are concerned. It brings together much material hitherto available only in a wide range of other volumes, and is to an extent a follow on from *Camouflage and Markings* by the same author.

As you thumb the pages, all sorts of items catch the eye. Finally one reaches one of the most fascinating sections of the book, its 'Chronology'. This dates many markings and colour schemes applied particularly to British and American aircraft, and sometimes includes the date of promulgation. The colours (although the book does not point this out) were often not evident for many weeks in any quantity.

Badges of many little-known RAF units are included and are bound to be of much interest. Some of the material concerning RAF markings and colour schemes in the main body of the book will certainly cause interest and discussion, but it is a pity that much needed riders to the text do not explain that the official instructions were apparently unheeded or soon changed. For instance, page 153 refers to fighter aircraft code letters being grey 1939-41; then red from September, 1941, to June, 1942—which they certainly were not except on night fighters. Some other officially ordered colours were equally not adhered to.

This book is not intended to be the last word on RAF markings. Instead, it covers a vast amount of ground—the whole world in fact—and will promote discussion and increased interest in aircraft markings where modellers meet.

There will surely be few enthusiasts who will not find space for this book, the latest Harleyford to come from the pen of that prolific researcher, Bruce Robertson.

Hardy annuals

TRAINS 'SIXTY EIGHT, edited by J. B. Snell. Price 12s 6d.

BUSES 'SIXTY EIGHT, edited by G. W. Watts. Price 12s 6d.

Published by Ian Allan Ltd, Terminal House, Shepperton, Middx.

A SLIGHT change in title but otherwise the same format and style we have become used to with past Ian Allan annuals. We sometimes question the value of dating these annuals. Some of the articles are topical and reflect the date in the title, for instance in *Trains 'Sixty Eight* the two photo features 'London's Last Steam Service' and 'The Last of Scottish Steam', but the excellent article 'A Russian Journey' dates from 1965 and the equally absorbing 'Ironstone to Cardiff' journey took place in 1959. The skilfully argued

and well presented article 'Have Britain's Railways a Future?' is perhaps the one true 1968 feature.

The main excursion into the past in *Buses 'Sixty Eight* occurs in the story of London Transport's route 11. Some nice shots of K and NS types and later marks only tantalise the modeller and make him wish that there were more vintage bus models available. Other articles cover buses in the Isle of Wight, Suffolk, Kent, the Canary Islands and, somewhat as a surprise, our own Post Office. Two experts, Alan Townsin and C. F. Klapper, describe respectively post-war AEC's and how bus services are tailored to public needs.

Both books are beautifully produced, printed on 96 pages of art paper and copiously illustrated. In addition, *Trains 'Sixty Eight* has seven pages of well-printed coloured illustrations.

LMS in pictures

LMS ALBUM, by C. C. Dorman. Published by Ian Allan Ltd, Terminal House, Shepperton, Middx. Price 30s.

IT is a pity that the haphazard grouping of the photographs, and the lack of both page numbers and an index unnecessarily spoil the value of this interesting collection of photographs. They are largely drawn from the 'twenties and early 'thirties and cover a wide variety of locomotives and views. But what a jumble! For instance, on succeeding pages we have an excellent view at Dumfries about 1926, the up 'Coronation Scot' passing Tring in 1938, a GSWR 0-6-0 in 1926, Llanberis station in 1948 and a Highland Railway 4-4-0 photographed in 1930. It is difficult to reconcile this example with the author's claim in the foreword to devote the first half to locomotives and stock built prior to 1923 and the latter half to LMS developments.

Profiles

CAR PROFILES 82-96. Price 2s each.

ARMOUR PROFILES 1-6. Price 2s 6d each.

Published by Profile Publications Ltd, Bookham, Surrey.

THE most recent batches of Classic Car Profiles are also, unfortunately, the last, for the time being anyway. Last of all (96) covers the unsuccessful V16 BRM of 1950, and other notable releases include a very fine coverage of the BMW 328 (as modelled pre-war by Dinky Toys), the P2 Alfa Romeo (87), the Lincoln Continental (88) and the Ford GT40 (90) which we would say was essential reading for anyone modelling any of the many kits of this car which are now on the market.

We have already given an advance review of the new Armour Profile series and since then have had the chance to see the remaining three of the first set. These cover the Cromwell, the Chaffee and the Tank Mark IV respectively. Of these the Cromwell is particularly noteworthy with an excellent colour drawing for anyone who contemplates scratch-building this vehicle in model form. Most of the Chaffee story will be new to the average enthusiast, while the Mark IV Profile, needless to say, gives much useful detail for anyone converting the Airfix Mark I.

Trolley swansong

BRITISH TROLLEYBUSES, by R. D. H. Symons and P. R. Creswell. Published by Ian Allan Ltd, Terminal House, Shepperton, Middx. Price 12s 6d.

RELUCTANTLY one must face the fact that trolleybuses are on their way out. Ever since November, 1966, when

Continued on page 161

Halifax B.11

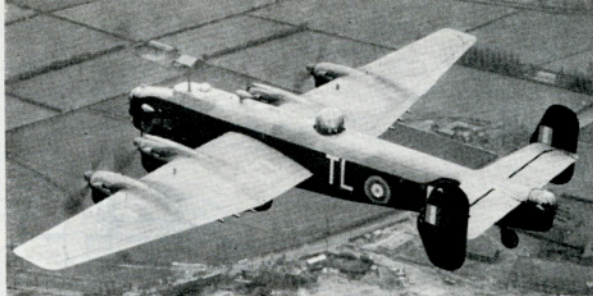
CONVERSION FROM THE AIRFIX KIT BY ALAN W. HALL

NO collection of RAF Bomber Command aircraft can be complete without the inclusion of all of the various marks of Halifax. Unfortunately for the modeller the versions differ quite considerably and involve major surgery. To give an idea of what I mean, the conversion described in this article took three weeks of evening work to complete.

I chose for my subject the Mark II as this contains as many variations as possible which can also be incorporated in other marks or variants. The Merlin in-line engines, for example, one of the most difficult of the alterations involved, can be applied to at least three variants of the basic type, as can changes to the fin and rudder areas. The only version not adequately dealt with here is the Mark II Series I which has the solid nose, but this is a relatively simple modification and most readers will be able to cope with this mark on their own. Other publications contain sufficient references.

To convert the radial engine Mark III of the Airfix kit to the Mark II involves removal of the H2S scanner, alterations to the fin and rudder, a complete change of nose by the addition of a bomb aimer's panel and front turret, changing the upper turret, cutting additional fuselage windows and the introduction of Merlin engines. Not a job, I might add, for the beginner as the work involved calls for considerable model making skill. I quote my own false start on the nose section. Here I thought that the double chinned appearance of the turret and bomb aimer's panel could be moulded from one piece of acetate sheet. I was wrong! If you have the same idea—don't try it. The moulding worked perfectly but it is quite impossible to achieve the subtleties of the shape without making it up in three pieces and even then care will have to be taken.

The best way to describe the model is to split the work up under the parts of the aircraft needing conversion. I am therefore starting with the fuselage and working through the remainder not necessarily in the order that the work is required to be done; the sequence doesn't really matter. Where no description is given of assembly, readers can rely on the basic kit instructions.

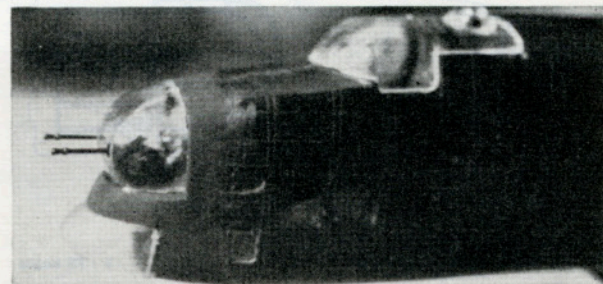


Fine view of a standard Halifax B II Srs I in flight shows how the early Halifaxes differed from the Mk III as typified by the Airfix kit. Nose, fins, engines and mid-upper turret must all be altered in the conversion (Aeroplane photo).

FUSELAGE Before cementing the fuselage halves together additional fuselage windows and portholes will be required. Depending on the actual aircraft to be built this will vary considerably. The plans show the simplest one without nose blisters and the additional window in that area. Other aircraft of this series have additional portholes in the rear fuselage and some even have a large window close to the fuselage roundel position. A study of photographs is necessary before making a decision.

Portholes and windows are cut out with a Mini-drill. Using the tip of the drill bore out a hole and then enlarge it to the size and shape required by moving the drill around in a routing manner. This is quick and easy. The new transparencies can be made from clear acetate or plastic sheet or taken from a spare Halifax set if you are lucky enough to have one.

The rear fuselage scanner is cut off before joining the fuselage halves. Once the halves have set a small block of balsa can be let into the hole, allowed to dry and then sanded down and polished with a fine flour paper. Any tiny gap can be filled with dope and talcum powder mixture before painting.

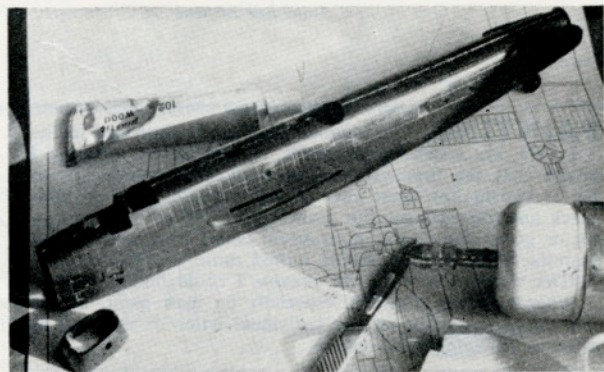


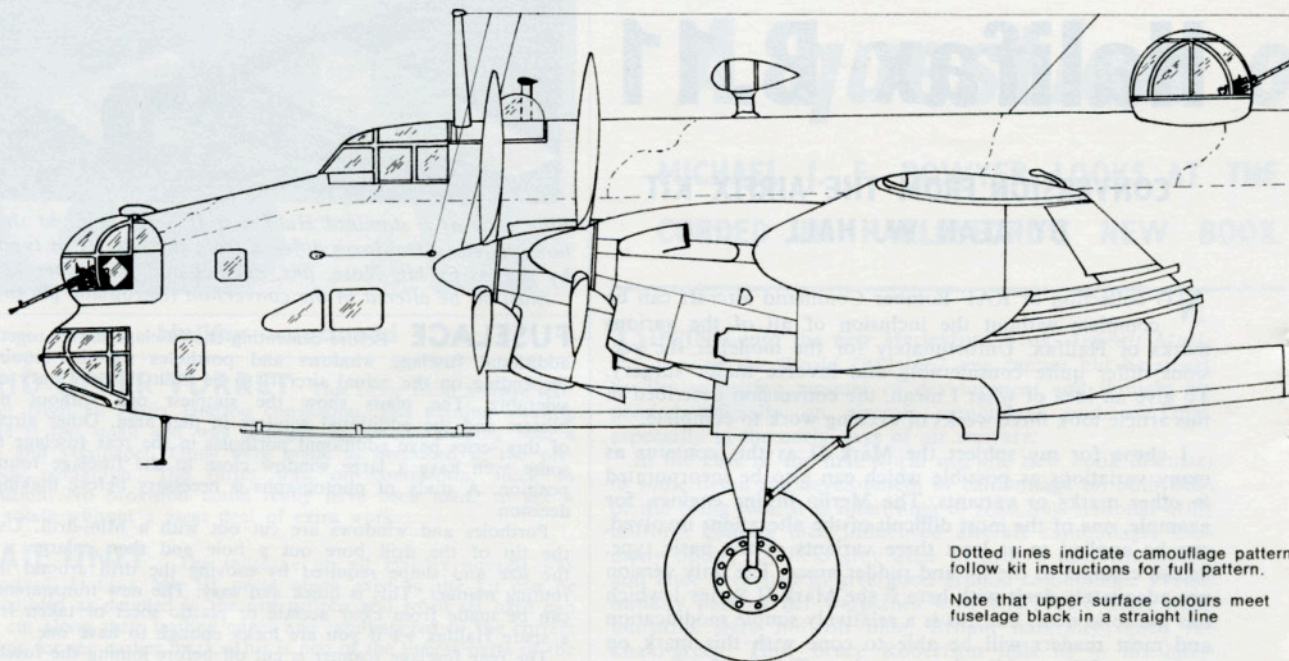
Above: Close-up of the modified nose of the model before painting shows the balsa insert and the separately moulded front turret and bomb-aimer's position. Transparency moulding details have been given in previous issues. **Lower left:** Preliminary work on the fuselage involves removal of H2S and nose extremity.

NOSE TURRET As described earlier, I had trouble with this section. The final solution was to stick an 'L' shaped balsa block for the solid areas of the nose between the top and bottom transparencies and then mould the turret and bomb aimers window separately. Some thought will have to be given to the way in which the turret is moulded as this can be tricky and also very difficult to describe. A close study of the plan will reveal that there is a bulging curve in side view and this shape must be captured in the moulding to ensure that accuracy is maintained.

Once fitted, but before cementing, the turret is cut to take the guns and here I cut down the four-gun mounts in the kit into twin guns by removing the top pair. By using the existing gunner figure I was able to firmly secure them to the model. The small tear-drop shape on the top of the turret was made from a small piece of balsa stuck in position and carefully sanded.

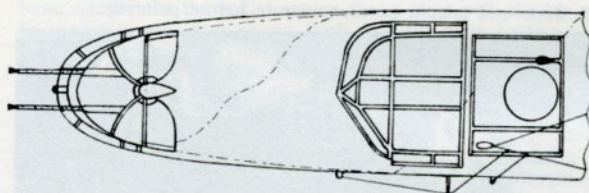
*Scale drawings on next page
Instructions continued on page 144*





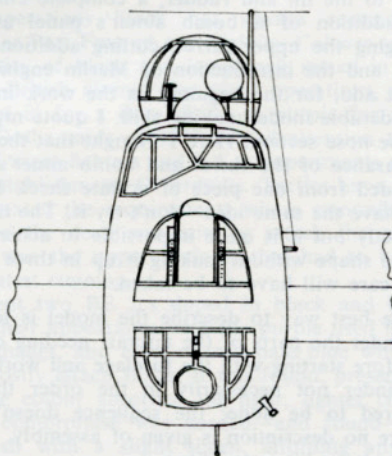
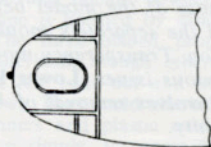
Top surface of nose

Handley Page Halifax B Mk II, Srs 1, W12



Underside view of nose showing bomb aimer's window

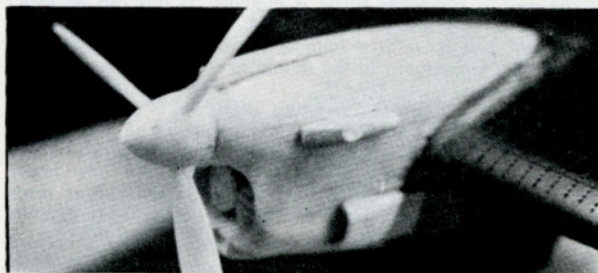
1 : 72 scale



Front view of nose

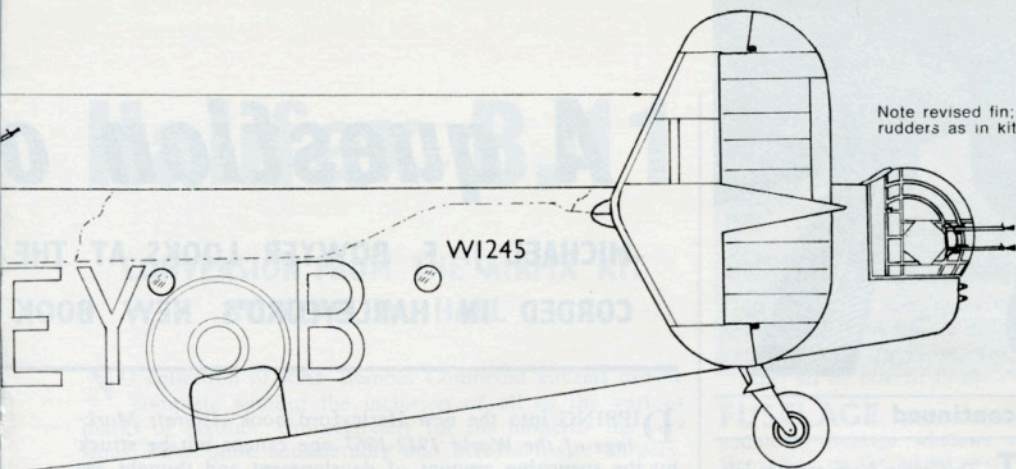
Drawings by F

Below: Close-up of one of the Merlin engines, carved and assembled from balsa and dowel and fitted with a Sunderland prop and spinner.



PAINING The camouflage pattern illustrated in the Mk. III kit instructions applies to the earlier version. I advise that the fuselage sides be masked with Sellotape to get a straight line from nose to tail at the division of matt black and camouflage. For transfers use either those in the kit or go to one of the more recent issues from independent manufacturers. On my model I used those supplied by His-AirDec which were the most suitable I could find in matt.

When applying transfers, especially on matt paint, always cut round the shape of the individual letter or marking as close as possible to the outline.



Serial and codes in red
Matt finish overall

Dimensions
Halifax II
Halifax III

Length
70 ft 1 inch
71 ft 7 inches

Span
98 ft 10 inches
98 ft 10 inches

Intake on inboard nacelle only

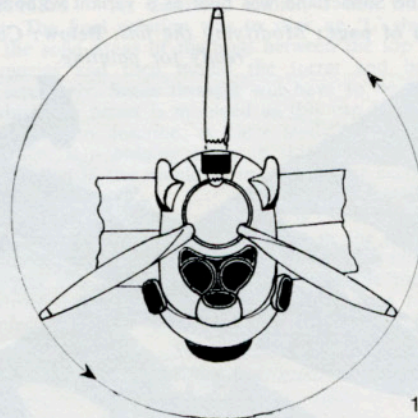
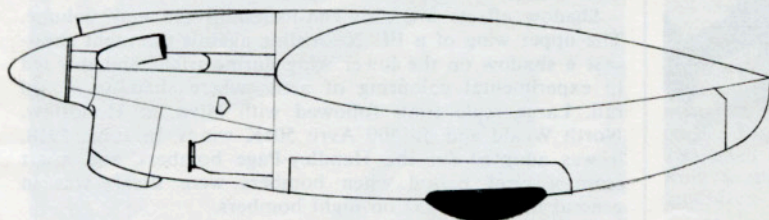
15: EY-B, of 78 Sqn RAF

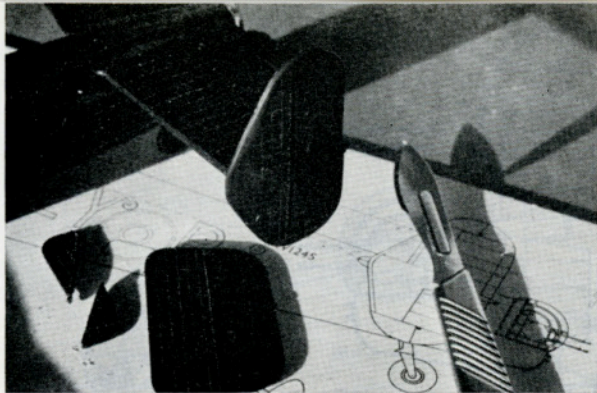
Upper starboard wing
shows revised nacelles

Richard L. Ward

Rolls-Royce Merlin engine nacelle detail—inboard engine

Front view—port inner nacelle
Prop blade broken for clarity





Halifax—continued

MID-UPPER TURRET This came from a spare left-over from an Airfix Hudson conversion. The existing locating hole is too small and was enlarged by careful shaping with a file and sandpaper. Guns were made as described in the previous paragraph. The turret was, on completion, stuck in position. No provision could really have been made to get it to rotate without a great deal of extra work.

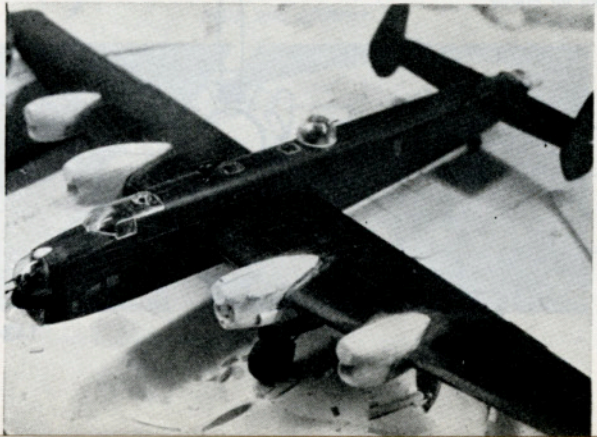
TAIL UNIT The tailplane on all Halifax aircraft was standard. Halifax Mk III units which exist in the kit can be assembled as detailed in the instructions and when set hard can be cut along their leading edges and sandpapered to the correct shape for the earlier mark. This is one of the easiest parts of the conversion.

ENGINES From the easiest to the most difficult. The basic nacelle for the radial engine that comes with the kit may be used but must first be cut flush with the wing leading edge, and the overhang on the wing upper surface removed. Balsa wood is used for the remaining portions of the nacelle. When these are cut out allow sufficient for shaping round the edges. Carve the engines on the wing, and do not stick the wing to the fuselage until the whole job is complete.

The main radiator is hollowed out again, routing with the drill and afterwards sanding smooth. The twin radiators inside the hollowed out section are cut from dowel rod, shaped and stuck in place. The chin radiator underneath the main one is actually let into the surface of the nacelle to avoid cutting a very complicated curve on the underside of a small piece of wood. Similarly the radiator on the top of the inner engines is cut, stuck in place and then sanded smooth. Liberal coating of dope and talcum powder mixture will fill any cracks and the engine is finished by sanding with very fine flour paper.

The three bladed props come from the Airfix kit of the Sunderland, though others are suitable and I do not advocate that one runs out and buys a Sunderland specially for its airscrews. They could alternatively, be made from scratch with balsa spinners and plastic card blades. Keen converters could, even more simply, transpose Sunderland and Halifax props so long as the Sunderland was built as a variant without spinners.

Top of page: Modifying the fins. **Below:** Completed model ready for painting.



A question o

MICHAEL J. F. BOWYER LOOKS AT THE
CORDED IN HARLEYFORD'S NEW BOOK

DIPPING into the new Harleyford book *Aircraft Markings of the World 1912-1967* one cannot but be struck by the surprising amount of development and thought expended officially on aircraft camouflage and markings, especially in the early days of air warfare.

In the case of the first world war the new book discusses in some detail the development of camouflage on both sides of the firing line. It is interesting to read how national army uniform colours then influenced aircraft camouflage, Germany opting for field grey after its army's uniform colour, and later darkened to give good ground camouflage. France initially painted her warplanes with a sky blue dope when uniforms were horizon blue. Britain naturally opted for khaki-green. This, Bruce Robertson tells us in his latest book, was primarily to protect the fabric against the effect of the sun's rays. Italy and the USA were primarily influenced by the French who, it seems, were the first to introduce a disruptive pattern.

For night operations black has always seemed the obvious colour, as Part Four of our *Fighting Colours* relates. A goodly quantity of black and lampblack mixed in dope was applied to British aircraft for night operations, whilst the French went in for a deep shade of purple for night-bombers. The Gotha raids of 1917 forced attention to the special needs of night-fighters and led to experiments at the Experimental Establishment, Orfordness. Tactics have, however, always dictated the requirements where camouflage is concerned. Since the need was now to attack the raiders from below, it was the upper surfaces that had to be disguised with greatest cunning.

Orfordness sent two BE 2cs doped in black and khaki, and compared their appearance with the purple used by the French, violet shades, and even overall pale blue which at night gave a ghostly effect. Black, it was found, presented a silhouette as the colour absorbed the light; lighter colours reflected it. A compromise was needed—and found—in a dark green finish with a slight sheen, affording approximately the same reflective content as earth and water. It was produced from a mixture of yellow ochre, lithopone and ultramarine blue. The new finish was called Nivo, and experimentally applied overall to a DH 4 sent to Farnborough in January, 1918. The aircraft's under surfaces had the usual standard transparent dope, less distinctly visible at night than black.

Shadow effects are also considered in the new volume. The upper wing of a BE 2c—visible against the night sky—cast a shadow on the lower wing during trials, and this led to experimental colouring of areas where shadows would fall. Large scale trials followed with Nivo, at Hounslow, North Weald and on 500 Avro 504K wings. In June, 1918, it was adopted for the Handley-Page bombers, and apart from a brief period when bombers were silver, was in general use until 1937 on night bombers.

Aircraft Markings also details experiments with British

AIRFIX magazine

f colourings

DEVELOPMENT OF CAMOUFLAGE AS RE- 'AIRCRAFT MARKINGS OF THE WORLD'.

roundels, in which first the white ring was replaced by one cream in colour. Eventually night flying aircraft had red and blue roundels, the red being dope toned with iron oxide. Ultramarine mixed with zinc oxide and carbon black produced the blue.

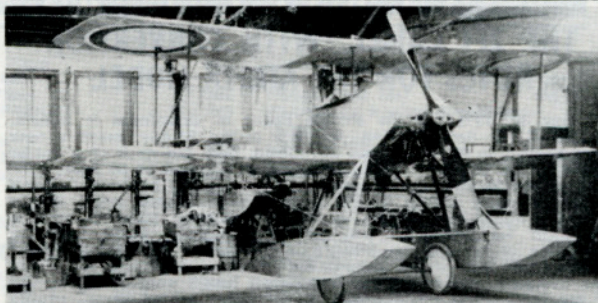
Bruce Robertson deals at some length throughout the text with roundel development. He recalls how at first the Union Flag was applied to fuselage sides and under the wings. It was soon found that the red cross of St George could be mistaken, at a distance, for the Iron Cross applied to German aircraft. At this time there came the French red-white blue roundel. This was followed in December, 1914, by an order that British aircraft should carry a blue-white-red roundel. The Naval Service, however, opted for a red 'nought', retaining it until late 1915 when the RNAS fell into line with the RFC decision.

Some excellent material on the precise colouring of World

Key to pictures: (1) Short 184 prototype displays the early Union Jack markings with red ring marking on wings, December 1914. (2) Sopwith Schneider with red ring marking in October 1915 shortly before this style of insignia was discarded. (3) Dazzle-painting on a DH9 in 1918. This was experimental on a machine used for coastal bombing. (4) SE 5A presentation aircraft Liverpool No 2 Newfoundland. (5) Sopwith Camel presented by Siam. (6 and 7) RE 8s presented by Siam and Stoke Poges respectively. More than a thousand British aircraft were presented by individuals or organisations in 1914-18 and all were suitably inscribed.



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2



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War I aircraft of much value to model makers will be found in the new book, which precisely dates many of the changes of colour and markings on British and foreign aircraft.

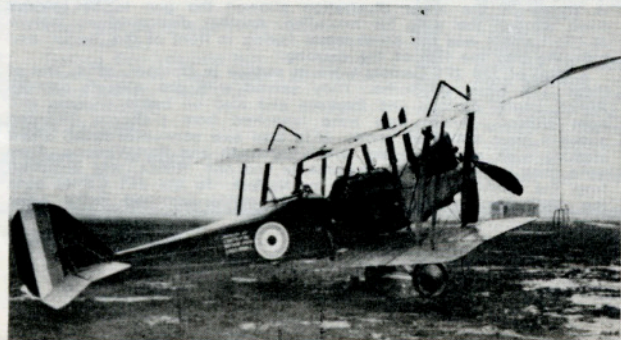
What is apparent is the duplication of effort and experiment where camouflage was concerned that occurred during world wars. That black was unsuitable for night-fighters because of its silhouette effect again became apparent in 1941, and it was superseded in 1942 by bluish-grey tones with green to deal with shadow effects. These black finishes of later years were matt in varying degrees, both on bombers and fighters. Harleyford's latest production ends where we came in—shades of khaki and black are being applied to many transport aircraft of the RAF. This time the authorities have opted for glossy finish to attempt to defeat the stabbing searchlights. Amazing isn't it?



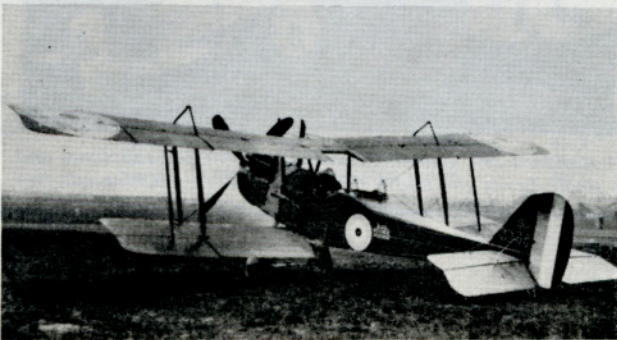
4



5



6



7

RNAS Camel

PAUL LEAMAN DRAWS AND DESCRIBES THE 2F1 CAMEL, WITH CONVERSION NOTES FOR THE AIRFIX MODEL

On May 30, 1918, off the shingle beach of Orfordness in Suffolk, Colonel C. R. Samson, RAF (formerly of the RNAS), made a near fatal attempt to fly a modified 2F1 Camel from the deck of a lighter towed by the destroyer, HMS *Truculent*, at a speed of 30 knots. The modification to the aircraft consisted in the fitting of skids in place of the standard wheels to the undercarriage. These skids, it was planned, would run in grooves which had been fitted to run the length of the lighter. It was thought that these would have the advantage of keeping the aircraft on the centre line of the lighter. In the event the aircraft jumped out of the grooves and the object was defeated. The result was that Camel N6623 went over the front of the lighter and disintegrated in the water as the vessel passed over it. Colonel Samson, a very experienced and valiant pilot, fortunately escaped with his life determined that this could be a practical proposition.

The experiment was subsequently repeated with a standard 2F1 Camel complete with a wheeled undercarriage and was successful. The lighter had been considerably modified to make it adopt an attitude horizontal in the water when towed at speed. The pilot this time was Lt Stuart Cully who survived the war to serve with the RAF.

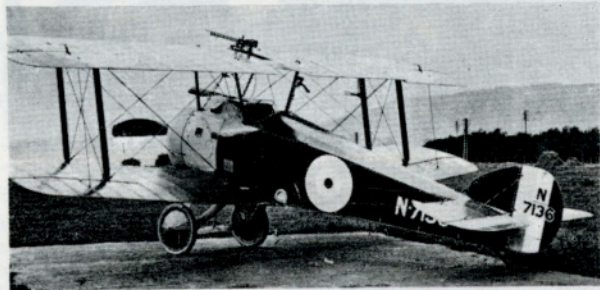
On August 10, 1918, the Destroyer HMS *Redoubt* put to sea as part of the Harwich Light Cruiser Force which was to carry out operations in the Heligoland Bight area. Towed behind the destroyer was a lighter carrying 2F1 Camel N6812 while other destroyers with the force towed lighters carrying flying boats, the normal use for these lighters. At 0530 on August 11 the force hove to off Terschelling and hoisted out six coastal motor boats which had till then been carried aboard the cruisers.

These were soon got under way for the mouth of the River Ems where they were to interfere with the coastal shipping. The next move was an attempt to launch the lighter-borne flying boats into the water, and while this was successful it was impossible for them to take off due to the sea conditions and they were re-embarked on their lighters. At this point Major Leckie, RAF, arrived from Great Yarmouth with three flying boats and soon after one of his aircraft spotted a zeppelin shadowing the force at a considerable height. Major Leckie, a very gallant pilot and extremely able commander, signalled visually its presence to the force realising that the Camel had a better chance of climbing to sufficient height but to bring the zeppelin to combat. The force replied, again visually to maintain radio silence, that he was not to interfere as the Camel would take off and attack the zeppelin. He was also told, erroneously, to return to base. This surprised him as he had barely started his patrol and had expected it to be of three hours' duration.

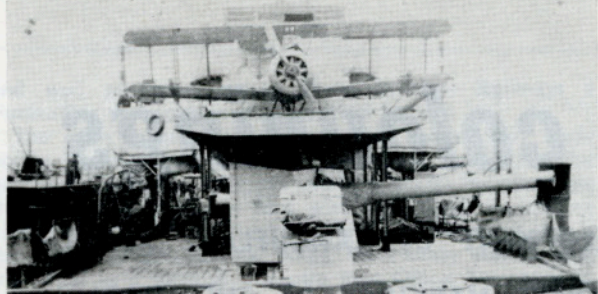
The force, commanded by Admiral Tyrwhitt, then turned seawards making smoke with a view to enticing the zeppelin in that direction. The manoeuvre was successful and the zeppelin, L53, commanded by Korvetten-kapitan Proels, followed him.

L53 was sighted at 0830 and Lt Cully was airborne at 0858 after a take off run of only 5 feet on the deck of the lighter. He commenced his climb towards L53 and by 0930 was at 18,000 feet with the zeppelin 1000 feet above him. By 0958 he was only 200 feet below L53 and approaching it, but by then was nearing the Camel ceiling. Realising this, Cully pulled back his stick and stalled his aircraft to bring his guns to bear. He opened fire with both guns, which were Lewis guns fitted on a standard mounting above his top wing.

One gun jammed almost immediately but he continued firing with the other and was able to see his bullets going home apparently at



A standard 2F1 Camel, ex-works, with striped tailplanes and a single Lewis gun above the wings. Cully's machine had two as drawn (Imperial War Museum photos).



The Sopwith 2F1 Camel was one of the first shipboard fighters, carried on the early carriers or launched—as here—from platforms on capital ships or light cruisers.

first with no effect! Looking over his shoulder as he dived away he could see small outbreaks of flame on the envelope of the zeppelin. These swiftly spread and within minutes it was burning fiercely and sinking fast. It soon broke up in the air and fell to the sea stern first. By the time it had reached the water it had burned out. The sole survivor from L53 had a miraculous escape as Cully saw him jump from the zeppelin with his clothes alight. He was later picked up by a Dutch fishing boat, practically unhurt despite a three mile fall!

Lt Cully by now had run out of fuel in his pressure tank and was left with only 20 minutes' fuel in his gravity tank. This being insufficient for him to land on the Dutch shore, he was preparing to ditch by some Dutch fishing boats when he saw first the destroyers and then the remainder of the force. Flying low over the ships he executed possibly the first victory roll before ditching in front of HMS *Redoubt*, which not only picked him up but restored his Camel to its lighter before returning to Harwich. Lt Cully was recommended for the VC for his bravery in this action but the award was not approved and instead he was given the Distinguished Service Order.

The sequel to this event was a lesson in air power in that the six coastal boats, which were by now operating in German dominated water without escort from the flying boats, were set upon by sea-planes from Norderney and Borkum and were totally destroyed or captured without inflicting any damage. A grim warning of air power at sea.

N6812, the aircraft used by Lt Cully was a standard 2F1 Camel built by Sopwith Aviation Company and was fitted with a 150 HP BR1 engine.

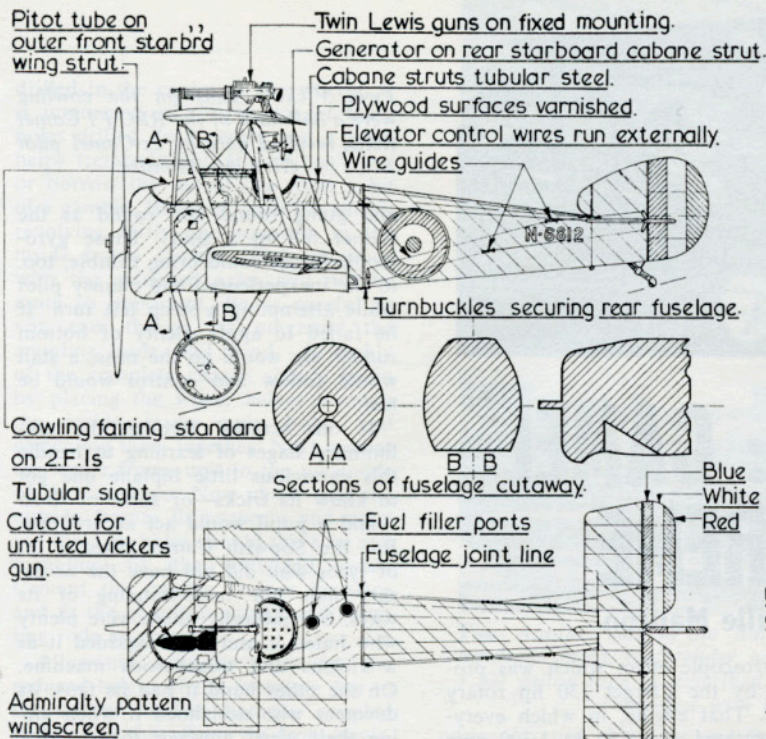
It had a wheeled undercarriage and the modifications were mainly concerned with its armament. This differed from standard in that the single fuselage mounted Vickers gun was removed and the Admiralty pattern gun mounting was removed from the top wing. In place of this latter a pair of Lewis guns were installed on fixed brackets, the guns fitting close above the wing and further aft than on the Admiralty mounting. The rear handles were retained on both guns. The exact method of fixing is not now known, but examination of photographs suggests that it would follow that shown in the drawing. The guns were sighted by means of a tube type sight on the fuselage.

A further difference between this and other Camels lay in the fact that all undersurfaces of this aircraft were painted pale blue, the shade of this being approximately that of Humbrol Deltic Blue, 133. Evidence of this may still be seen on certain metal panels visible as the aircraft now hangs in the Imperial War Museum in London. The aircraft has been re-painted since it saw action on August 10, 1918. On that day the serial was as shown in drawings, plain white and the elevators were painted in the manner of Beardmore-built aircraft with blue, white and red stripes on the tailplane as shown.

The 2F1 Camel was specifically built as a shipboard aircraft and as such differed in many ways from the F1 Camel. The most striking difference lay in its fuselage construction. This was made to be detachable at a point aft of the cockpit. The two halves were joined by a metal turnbuckle at each of the four fuselage main members. The tail control wires were run externally from this point aft, being guided by runners on the rear fuselage. The wing span of 2F1 was 13 inches less than that of the F1 version and the top wing was 15/16 inches nearer the fuselage than the standard aircraft though the total height of the 2F1 was 4 inches more. The 2F1 used tubular steel centre section struts in place of the wooden ones of the F1 in order to allow it to be strengthened for slinging from eyes at the top of these struts and above the upper wing.

In place of the classic twin Vickers of the F1, the 2F1 had a single offset to port. This was augmented by a Lewis gun on an Admiralty pattern mount above the top wing. The mounting which is shown in the lower illustration allowed the gun to be pivoted down through the wing for reloading. Another distinguishing feature of 2F1 Camels was the sheet metal fairing in front of the 'hump' and blending into the line of the cowl.

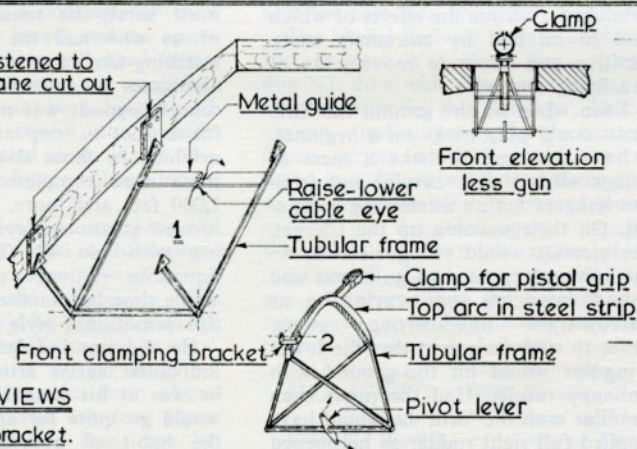
A total of 129 2F1 Camels were in service in October, 1918, and of these 112 were shipborne. They served with the aircraft carriers *Argus*, *Eagle*, *Furious* and *Pegasus* and also on battle cruisers and light cruisers, where they were launched from platforms mounted above a main armament turret. 2F1s also saw service at RNAS shore stations such as Felixstowe, Great Yarmouth and Port Victoria. They were used in many other experiments and one, N6814, was launched from the airship R23 at Pulham in Norfolk. To the 2F1 Camel goes the distinction of mounting the first carrier-launched strike when



LT. S.CULLY'S 2.F.1 CAMEL, N-6812

Markings :- upper surfaces, khaki green : all undersurfaces, light blue : metal panels, light grey : serial, white.

Metal plates fastened to sides of top plane cut out

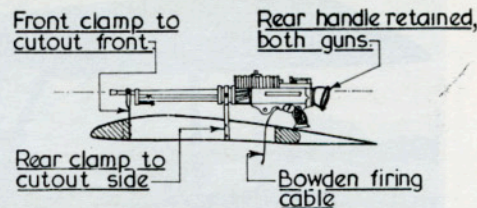


SCHEMATIC VIEWS

1 - Wing fixed bracket.

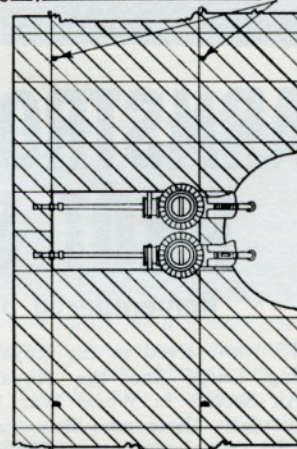
2 - Wing pivoting bracket.

STANDARD ADMIRALTY SINGLE LEWIS UPPER WING GUN MOUNTING NORMAL TO 2.F.1 CAMELS

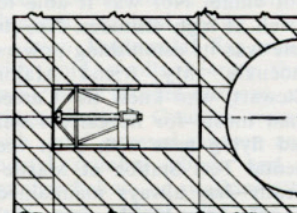
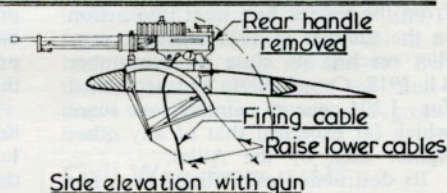


NON STANDARD TWIN LEWIS GUN MOUNTING ON N-6812

Lifting eyes, all 2.F.1 Camels



Feet



Above: Working drawings for converting and finishing the Airfix Camel as a 2F1. Plan and side elevation (top left) are 1:72 scale, and remaining detail views are 1:36. While beginners can simply add details and repaint the basic model, anyone desiring a more accurate conversion should also deal with the following points: (1) File off lacing detail from port side of fuselage. (2) Modify cockpit shape. (3) Reduce wing-span from tips to 4.485 inches overall. (4) Add new tips to tailplane—from plastic card—to match drawing. (5) Reduce wing chord slightly, from trailing edge, to match drawing.

Camels from *Furious* attacked the zeppelin sheds at Tondern and destroyed zeppelins L54 and L60. L53, brought down by Cully, was in fact the last zeppelin destroyed in aerial combat during the 1914-18 war.

The drawings give all necessary data for finishing the Airfix Sopwith Camel in the correct colour scheme and condition for its classic engagement with L53, and it is a simple matter to make the twin Lewis mount and guns from scrap plastic and heat-stretched sprue. Roundels and serial come from the kit which, incidentally, portrays the aircraft in its present condition as preserved in the Imperial War Museum, London.



Twin Vickers guns on the cowling were a hallmark of the RFC F1 Camel (left), recalled here by ex-Camel pilot Grenville Manton.

ARMSTRONG : CAMEL PILOT SUPREME

Remembered by Grenville Manton

PILOTS who served in the Royal Flying Corps and the Royal Naval Air Service in World War I and particularly those who flew the Sopwith F1 Camel are agreed that it was a very remarkable aircraft. That it was an extremely formidable fighting machine there is no doubt for from the time it first went into action in the summer of 1917 until the conflict reached its close on November 11, 1918, Camel pilots had accounted for 1,294 enemy aircraft—a score which far exceeded that of any other fighter used by the Allies.

Its destructive capabilities were not due to its possessing superior speeds or rate of climb. Nor was it able to operate well at high altitudes. No, its great forte was its astonishing powers of manoeuvre. My friend Major Oliver Stewart, who knew the Camel better than most—for he carried out protracted flying tests with it at the Experimental Test Station at Martlesham Heath—has always maintained that it was the most highly manoeuvrable machine that has ever been built.

But, despite this little biplane (which had a span of but 28 feet and an all-up weight of only 1,435 lb) being so nimble and having a lightness of control that was quite remarkable, it was not an easy and straightforward aeroplane to fly. It is not too much to say that until one had become aware of its idiosyncrasies and had learned to deal with them instinctively, piloting a Camel could be an alarming and perilous experience. The main cause of its peculiarities which could be dealt with only by a special handling technique was

the gyroscopic effect which was produced by the Clerget 130 hp rotary engine. That engine, in which everything rotated at 1,250 to 1,300 rpm except the crankshaft and the carburettor, weighed something in excess of 400 lb. In a machine as small as the Camel this whirling mass of metal produced a torque the effects of which had to be met by extremely swift, positive and accurate movements of the flying controls.

Even when on the ground the little beast could play tricks on a beginner. I have seen pupils make a mess of things when simply taxiing out from the hangers before attempting a take-off. On their opening up the Clerget, the aircraft would swing violently to the left and proceed to go round and round, bouncing and swaying on its narrow-track undercarriage sometimes to such an extent that the lower wing-tips would hit the ground with unhappy results. Had the pupil been familiar with the 'drill' he would have applied full right rudder as he opened up the throttle and re-set the fine adjustment and so kept his mount under control.

In the air too the Camel pilot had to be wary of the machine's waywardness especially when making turns. For during right turns of 45 degrees and more those gyroscopic forces would ruthlessly push down the nose unless the little wooden rudder bar was thrust to the full extent by the left foot to apply top rudder. If this was not done in double quick time, the *ab initio* would see ahead of him over the two Vickers guns not the line of the horizon but the earth below

and going round and round as the Camel fell in a spin! Those gyroscopic forces could bring trouble, too, to the inexperienced and clumsy pilot while attempting a steep left turn. If he failed to apply plenty of bottom rudder, up would go the nose, a stall would follow and control would be lost.

If one scraped through the preliminary stages of learning to handle this capricious little biplane one got to know its tricks—or some of them—and a pupil would act accordingly. But the Sopwith Camel killed a lot of tyros who did not have the necessary flair nor understanding of its ways. So, naturally, there were plenty who hated it and who regarded it as a vicious and treacherous machine. On the other hand it had its fans, its devotees who acclaimed it when airing their views amongst the sceptics.

Of all the Camel pilots I met none flew with greater enthusiasm and verve than did Lieutenant D. V. Armstrong whose consummate skill must surely be remembered by all of us who had the opportunity of watching him carry out his astounding aerobatics in a Camel nearly half a century ago. It was no unusual thing for a pilot to loop and flick roll his machine in those days. But whereas these were completed at heights of 2,000 feet and more, Armstrong performed at *ground level*. He was serving with No 44 (Home Defence) Squadron stationed at Joyce Green at the time he practised and perfected this sensational style of stunt flying.

He did not indulge in his highly-individual aerial artistry only when he was at his squadron's station. He would go quite far afield and was in the habit of putting in a fleeting appearance at numerous RAF air fields of the 18th Wing in Southern England. People would spot a Camel sweeping across their aerodrome at nought feet and at top speed (124 mph) and then, when close to the hangars, it would go into a climb, become fully inverted and dive with rafwires whining to complete a loop of remarkably small compass. And having finished this brief and perfectly executed exercise, Armstrong would fly away at a low height then turn and again approach the hangars at ground level. Entranced by his

Continued on page 160

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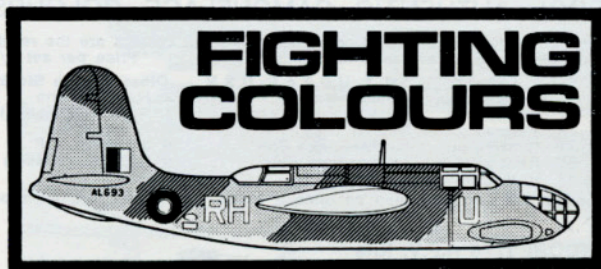
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Part 4: Fighters overseas

WHILST the Battle of Britain raged, opening shots in the Middle East campaign were being exchanged. There the RAF had been engaged in policing operations against rebels in the manner of the recent Aden operations. The war in Abyssinia caused home-based squadrons to be despatched as a warning to Mussolini; mainly they were bomber squadrons. These units returned, some leaving their aircraft behind. Instead of the handful of fighters being left behind it was decided better to despatch Gladiators available when re-equipment of home-based squadrons with Hurricanes was well under way. No 80 Squadron based at Debden was chosen and in May, 1938, its silver painted Gladiators including K7901, K7904, K7905 reached Abu Sueir. Here they retained the white arrowhead on the fin bearing the squadron motif. Each Flight Leader had the fin of his machine in Flight colour, 'A' red, 'B' yellow, 'C' green, applied respectively to K7903, K7902 and K8011.

The first Gladiators despatched to Egypt arrived in February, 1938, and equipped No 33 Sqn providing defence for Cairo, Jerusalem and the Canal Zone. Its all-silver Gladiators included K8054, L7608, L7613. The third fighter squadron to appear in Egypt was No 112. It arrived at Alexandria late May, 1939, its Gladiators including K6134, '35, '36. These and a handful of Gauntlets of 6 Sqn including K7792, K7863 and K7881 based at Ramleh, and Blenheim IFs of 30 Sqn (L8541, L8542 possibly included) constituted the fighter force when the war began.

There was no urgent need for camouflage, although the Blenheims retained green-brown/black-white finish applied before delivery from the UK. Codes allocated to the squadrons, but possibly not all applied, were: 6(XE), 30(DP), 33(TN), 80(GK) and 112(XO). When the war commenced these were ordered to be changed to 6(JV), 30(RS), 33(NW; possibly used NY), 80(EY ?) and 112(GA), the letters being allocated initially not duplicating those of home-based squadrons. In later years codes allotted for use in that theatre sometimes duplicated those used in the European theatre.

Need to build up the home fighter force still precluded reinforcement in an area removed from operations so that, when the Italians declared war on June 10, 1940, the fighter force facing them remained as in 1939.

Following the declaration of war, Gladiators of 33 Sqn began patrols over the Libyan border. On June 14 the first major skirmish took place between Gladiators including N5761, N5774 and N5783 and an escorted Caproni 310. Patrols and brief engagements followed between Gladiators (now camouflaged) and Italian forces. There was also one Hurricane now available for action. This and the Gladiators were brown-green/black-white camouflage like home based fighters in early 1940. They had grey codes and seem in many cases to have had white serials.

In July, No 112 Sqn joined the battle and soon No 80 was in action, too. All were using mainly Gladiator Is, 80 Sqn's



Top: A Gladiator in the Western Desert in the summer of 1940. Note the black port wing under surfaces. The under belly is all white, and the fuselage roundel appears to be Type B. Observe the chock stowed temporarily in the inter-plane rigging wires. **Above:** R6135: RT-E photographed in the summer of 1940 in the Middle East (Warbirds Museum).

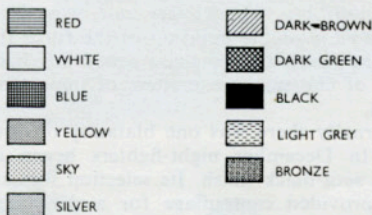
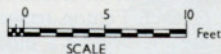
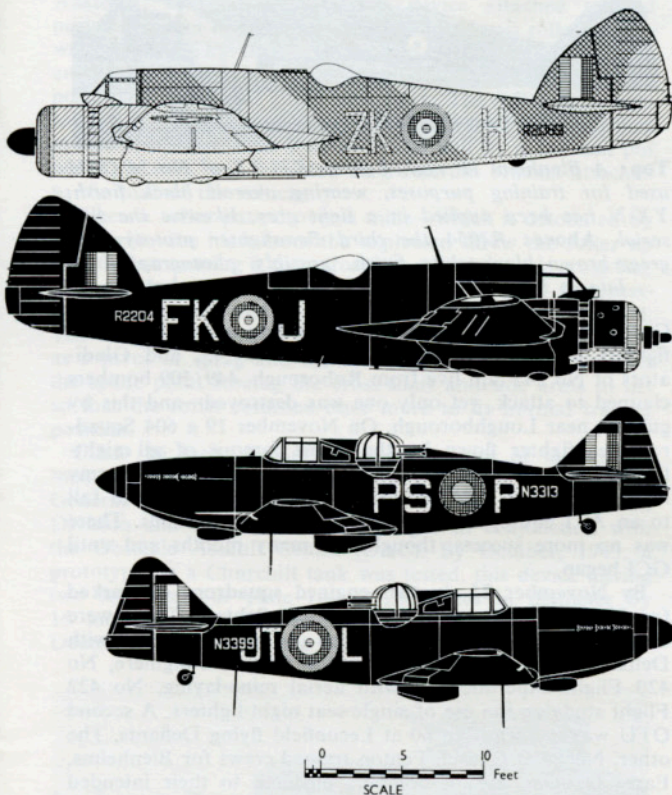
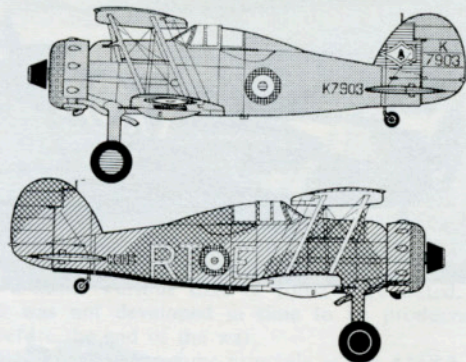
including N5583 (Mk II) and Mk Is K7901-7905 and No 112's including K7969, L7612. In September, 1940, No 33 Sqn passed its Gladiators to No 3 Sqn, RAAF, and 112 Sqn was operating a detachment in East Africa.

MALTESE DEFENDERS

Malta was a well-established naval base, and therefore an attractive target to the Italians. It was destined to bear a fearful onslaught, only to be equally cruelly treated some 25 years later. In 1939 crated Royal Navy Sea Gladiators arrived at Kalafrana, there to remain until needed. Some served aboard the carriers *Glorious*, *Furious* and *Formidable*. When the German attack in May, 1940, opened there were still about a dozen Gladiators in the crates. Defence of the island now lay in the hands of a few outdated naval fighters, for the RAF had none to spare.

A few weeks previously, obvious dangers in the situation were apparent and a handful of RAF officers were posted into Malta. Four Sea Gladiators (N5519, '20, '24, '31) were erected at Hal Far to equip its Fighter Flight. Being naval aircraft they wore medium grey and greyish green upper surfaces with Sky fuselage sides and under surfaces. Roundels were as applied to RAF fighters in June, 1940, at home. Roundels appeared beneath the lower 'plane tips, and tall fins stripes were carried. Serials and individual letters (painted aft) were black. N5523 and '29 were erected in June as reserves. They were soon backed by a few Hurricanes which probably had green-brown/blue-black camouflage.

The day after Italy entered the war, Italian bombers began attacks on the island. The Gladiators could do little against them, except upset their aim and boost the defenders' morale. Throughout June and July the Sea Gladiators fought until gradually written off in action or by less spectacular attri-



Drawings by
A. M. Alderson

Top to bottom: All-silver Gladiator of 80 Sqn used in the Middle East before the war. K6135, subject of the photograph opposite, is almost certainly wearing the markings of No 112 Sqn. R2069 a Beaufighter II of 25 Squadron as recorded on March 25, 1941. No A.I radar was fitted at this time. R2204, another Beaufighter if, as recorded at AFDU Duxford on March 29, 1941. Defiant IPS-P: N3313 in RDM2 finish. N3399: JT-L of No 256 Sqn as recorded in April, 1941.

December, 1967

tion. The few survivors of the epic stand were taken over by 261 Squadron formed at the start of August and equipped with Hurricanes.

IN ADEN AND EAST AFRICA

Aden occupied a strategic position on the Far East route in a way after that of Malta, facing Italian forces in Ethiopia and Eritrea. Its defence was in the hands of the brown-green/black-white painted Gladiators of No 94 Sqn coded GO. On March 26, 1939, the squadron had formed and during April took on charge Gladiators N2278-80 and N2283-95 which were available in 1940.

First attempt to bomb Aden was made on June 13, when the Gladiators mercilessly cut more outdated aircraft down. 94 Sqn soon assumed an offensive ground-trafficking role supporting our troops in East Africa. Early in 1941 it supported the British advance which ended the Italian occupation in East Africa. Then No 94 moved to Egypt and re-armed with Hurricanes wearing the same colour scheme as those used in the last weeks of the Battle of Britain.

IN GREECE AND CRETE

Spasmodic desert fighting took place as the Italians craftily massed in the Balkans, then attacked Greece from Albania. Britain gave support to Greece in the form of three Blenheim squadrons and Nos 80 and 112 Squadrons using Gladiators which took a satisfying toll of the *Regia Aeronautica*. The Gladiators were now in brown-green/Sky finish with grey codes and black serials. No 33 Sqn took its similarly painted aircraft to Greece in early 1941, Hurricanes the like of which would soon equip other squadrons. 80 Squadron's Gladiators included K7892 and K8017.

Few fighters survived the campaign, but seven Gladiators, six Hurricanes and a few Blenheim fighters were available along with three Fulmars to put up a pathetic defence of Crete against a huge German armada.

All of the fighters still had brown and green upper surface camouflage. Type A roundels on the fuselage sides in the Middle East area had a yellow ring added in June, 1940, and Type B roundels were placed above the wings when camouflage was applied. Type A roundels beneath the wing tips were usual. During the campaign in Greece some Hurricanes were seen with half black under surfaces and some certainly had the remainder of their under surfaces light blue, although 'all-Sky' (duck-egg blue shade) was usual.

NIGHT BATTLE OF BRITAIN

The Battle of Britain had been won by October, 1940. Poorer weather and the long nights provided the Luftwaffe with ideal conditions with which to continue operations, spasmodically and with reduced forces by day and with ever-increasing forces by night.

Against the night-bomber the RAF was still ill-prepared. Emphasis had long fallen on expanding the day fighter force. In September, 1940, when Phase I of the night offensive opened, there were only eight night-fighter squadrons. Six had Blenheim Ifs (Nos 23, eg, L6841, 25, eg, L6741, 29, eg, L1463, 219, eg, L8685: FK-N, 600, eg, P4829 (Mk IV), 604, eg, L4908: NG-O) and two Defiants (Nos 141, eg, N1552, 264, eg, L7013: PS-U). In addition, 'B' Flight of 87 Sqn at Bibury was flying Hurricanes for night-fighter work. Many other SEF (single-engine-fighter) squadrons had sections available whose chances of successful interceptions seemed slight.

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Fighting Colours — continued

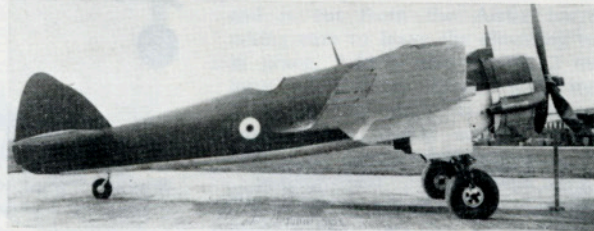
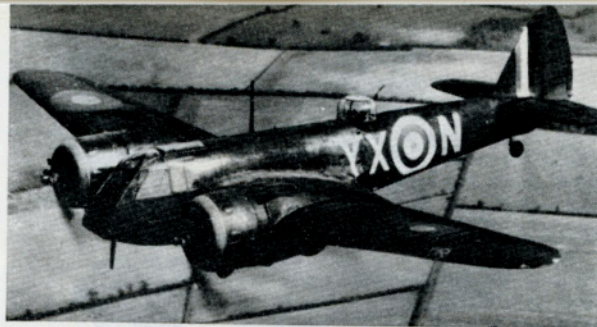
The main trouble was that no really suitable aircraft was available for night fighting in any numbers, but the first examples of the Bristol Beaufighter were trickling into several squadrons. The short nosed all-silver Beaufighter prototype, R2052, had first flown on July 17, 1939. The aircraft had been completed in the amazingly short time of six months after the initial layout was drawn. When the war began 300 Beaufighters (R2052-2101, R2120-59, R2180-2209, R2240-84, R2300-49, R2370-2404, R2430-79) were on order, and soon after the prototype lost its silver finish, Type A roundels on the fuselage and above and below wings and its under-wing black serials. In their places came the brown-green/white-black standard fighter finish with Type A fuselage roundels, and Type B roundels above the wing tips. In May, 1940, a yellow ring was added and fin striping when the machine was at A & A E E. R2052, incidentally, had Hercules I SM engines (similar to the Mk III) with small oil coolers beneath its cowlings and exhaust stacks along the side of the cowlings. Later, the intakes were re-positioned on wing leading edges, R2053 had Hercules I M (similar to the Mk II), and then came R2054 the third prototype with Hercules IIIs used for official acceptance trials. On July 27, 1940, the first Beaufighter If delivered to an MU for operational fittings. It had brown-green/silver finish like other 'Beaus', although it was not long before Sky under surfaces became general. Code letters were light grey. RO-H still had silver under surfaces on March 24, 1941, ZK-H was still wearing ostensibly 'day fighter' colours (sky under surfaces) on March 25, 1941 and ZK-M as late as January 2, 1942.

Aerodynamic refinements, engine modifications, changes to the under-carriage and cannon installation took place in the year before delivery. Then, on September 2, 1940, Beaufighters began to join squadrons when R2056 was delivered to No 25 Sqn, R2072 to No 29 Sqn at Digby, No 219 Sqn at Catterick received R2070 and 604 Sqn took R2073 on charge at Middle Wallop. Within a week 600 Sqn had five Beaufighters including R2071 and R2076, and 23 Sqn had one for trials, R2077.

In comparison with the Blenheim the Beaufighter was a heavy powerful aeroplane with an unpleasant take-off swing and pronounced longitudinal instability. Added to these were cannon troubles, and the collection of snags rendered these aeroplanes of limited operational value for many months. But, they had tremendous hitting power, were fast and large enough to carry airborne interception radar (Mk IV at first) for which nose and wing 'bow and arrow' aerials were soon fitted. When an aircraft was serviceable its equipment was not. Even when the radar and aircraft worked in unison there was a major snag—the A. I radar had limited range and not until interceptions were ground controlled (the fighter being guided towards the foe upon which it then closed on its A. I) did the success of the Beaufighter begin to reveal itself.

An expansion of the night-fighter force came when No 73 Sqn (replaced in December by No 87), No 85 and No 151 Hurricane squadrons joined the third Defiant squadron, No 307. By early November the Beaufighters were mingling during the night with the Blenheims on operations.

Phase II of the night-offensive opened with the Coventry raid of November 14/15. Thereafter attacks were switched to the Midlands, Merseyside, Scotland, Plymouth and Belfast—as well as continuing against London. For defence in the



Top: A Blenheim IF night-fighter, K71 ?? of No 54 OTU used for training purposes, wearing overall black finish. YX-N has been applied in a light grey, likewise the tiny serial. **Above:** R2054 the third Beaufighter prototype in green-brown/black-white finish, possibly photographed as late as June, 1940 (Imperial War Museum photos).

Coventry raid, with them Blenheims flew 35 sorties, Beaufighters flew 12, Defiants 30, Hurricanes 43, and Gladiators of No 247 Sqn five from Roborough. 449/509 bombers claimed to attack, yet only one was destroyed—and this by gunfire, near Loughborough. On November 19 a 604 Squadron Beaufighter flown by that most famous of all night-fighter pilots, John Cunningham, destroyed an enemy bomber engaged over Oxfordshire probably the first to fall to an A. I equipped night-fighter in squadron hands. There was no more success, though, for many months and until GCI began.

By November 25 six twin-engined squadrons earmarked for Blenheims were now to have Beaufighters. There were now eleven night-fighter squadrons on operations, five with Defiants, three with Hurricanes, the FIU at Tangmere, No 420 Flight experimenting with aerial mine-laying, No 422 Flight studying the use of single-seat night-fighters. A second OTU was to form, No 60 at Leconfield flying Defiants. The other, No 54 at Church Fenton trained crews for Blenheims. Early Douglas Boston bombers unsuited to their intended role were being considered with interest for night-fighter conversion; but the delivery rate was disappointing. Such was the state of the build-up of the force that on February, 1941, the seven twin-engined squadrons had only 87 pilots. These, of course, were matters of importance to the policy makers.

Externally there was one blatantly obvious change in the force. In December night-fighters began appearing in an overall soot-black finish. Its selection was an obvious one—black provided camouflage for a dark night. This was a special finish, its super-matt quality giving it the texture of suede. Officially it was called RDM2. But there were snags. Camouflage effect was spoilt by two factors. Squadron letters usually sited as on day-fighters were painted in a very pale shade of grey, also serial numbers. Risk of enemy attack on airfields was considered slight, winter shadows in any case helping to hide the fighters whose finish soon was grimy. Where the colours really failed was on a moonlight night, and at high altitudes, when the fighters stood out as strong silhouettes which enemy aircraft saw and avoided. Nevertheless these markings were retained, although the diameter

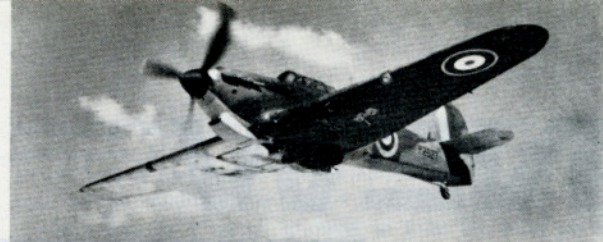
of the fuselage roundels was reduced late in 1941. Some aircraft had the white ring and area on the fin overpainted in red, or black or blue. During Autumn, 1941, squadron letters and serials changed to dull-red, otherwise the finish was little changed until Autumn, 1942, on night-fighters.

Interesting tactics devised to combat the night bombers included the 'Fighter Night'. Hurricanes and other SEFs patrolled high above the target area, whilst guns below were temporarily silenced or fired at a much lower ceiling trapping the enemy for interception. On moonlight nights the Luftwaffe crews could, however, see the fighters silhouetted and very few successful interceptions were made. In December guns claimed 10 bombers, fighters four.

Another idea was the trailing of mines from barrage balloons. When the bomber hit a cable a mine was whipped up to the aircraft to explode on impact. More mines exploded on the ground after the balloons had drifted on the prevailing wind! Only limited success attended the plan to sow mines or trail them first from converted Harrow bombers including K6993 and K7020 operating from Middle Wallop in concert with the radar station at Worth Matravers. At least one He 111 was claimed, over Dorset on December 22; but there were considerable problems and several premature mines burst in the aircraft. Havoc IIIs (eg AX913 in use May, 1941) later trailed the 'Long Aerial Mine' over the south and around Norwich, the weapons often landing and exploding.

On December 21, 1940, there began a campaign which was to be waged until the end of the war, increasingly effective and of ever greater intensity and variety. This was Operation *Intruder*, and six Blenheim IFs of 23 Sqn opened it, flying to airfields in Normandy and around Artois. They saw four enemy bombers, but were unable to engage them; instead they bombed their bases. These Blenheims were all-black.

Overall success of the black fighter was probably higher than results suggested, for the enemy loss rate due to com-



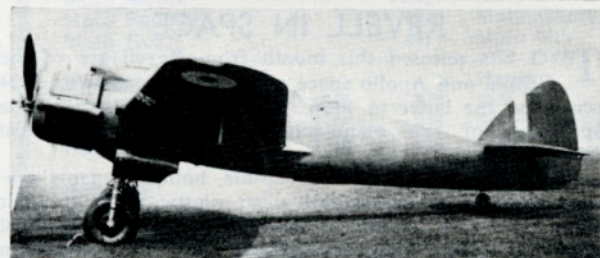
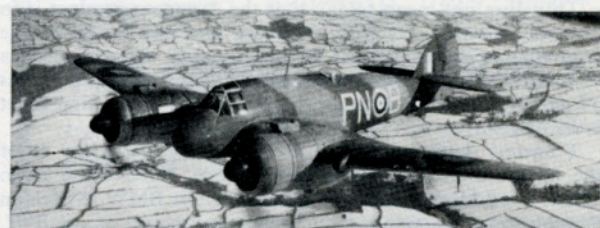
Above: Hurricane P2627 in mid-1941 with tropical filter and dark green/dark earth upper surfaces. The under surfaces can be seen to be black and probably a shade like duck egg green. Under wing roundel outlined yellow, obliterated under starboard wing.

bat, weather, untrained crews, etc, was surprisingly high. 'Fighter Night' claims were only three enemy aircraft in the first three months of 1941. 'Twins' detected 194 enemy aircraft, and engaged 31 with little success over the same period. Anti-aircraft guns claimed 37, and in February-March, balloons seven. In April, 'twins' had 55 engagements and SEFs 39. During the last raid on London in May, 1941, sixty Hurricanes and Defiants patrolled over London whilst 20 more were over Beachy Head. Between them they claimed 19 victories. Four more were claimed by 'twins' around the capital, and four by gunners. In reality only eight enemy aircraft had been destroyed.

Lighter nights and the need to amass forces for 'Barbarossa', the attack on Russia, brought a withdrawal of much of the German bomber force. For the Luftwaffe this was fortuitous, for it came at a time when A. I radar was just beginning to be effectively used in increasing numbers of Beaufighters. Odds against the night-bomber were closing fast—and the Mosquito was taking shape at Hatfield.

Home based night-fighter squadrons, and examples of the aircraft they used, over the period September, 1940 to May, 1941 were:

Sqn	Letters	Serial	Aircraft type	Notes
23	YP	L1438	Blenheim 1f	Night-fighter
23	YP	L6837	Blenheim 1f	Intruder. January 1941
23	YP	R2077	Beaufighter 1f	Night-fighter trials. October 1940
23	YP	BB900:G	Havoc 1	Solid nose aircraft. April 1941
23	YP	BD124:D	'Havoc 1'	'Boston' nose; 1940 - June 1941
25	ZK	R2058	Beaufighter 1f	October 1940
29	RO	L1375:J	Blenheim 1f	December 1940
29	RO	R2138:L	Beaufighter 1f	November-May 1941
68	WN	L6839	Blenheim 1f	February 1941
68	WN	R2264	Beaufighter 1f	May 1941
85	VY	V7074:K	Hurricane 1	December 1940
85	VY	N3327	Defiant 1	February 1941
85	VY	B1461	Havoc 1	March 1941
87	LK	W9154:D	Hurricane 1	May 1941
93	HN	BD117	Havoc 1	January 1941
96	ZJ	V7752	Hurricane 1	May 1941
96	ZJ	N1083	Defiant 1	May 1941
141	TW	T3926	Defiant 1	May 1941
151	DZ	V7286:U	Hurricane 1	January 1941
151	DZ	N1790:P	Defiant 1	May 1941
219	FK	L1403	Blenheim 1f	December 1940
255	YD	N3335	Defiant 1	January 1941
255	YD	V7304	Hurricane 1	May 1941
256	JT	N3450:N	Defiant 1	May 1941
256	JT	V3995:Y	Hurricane 1	May 1941
264	PS	N3368	Defiant 1	May 1941
307	EW	N3315	Defiant 1	April 1941
600	BQ	L6879:D	Blenheim 1f	December 1940
600	BQ	R2256:F	Beaufighter 1f	May 1941
604	NG	L8680:Q	Blenheim 1f	January 1941
604	NG	R2098:H	Beaufighter 1f	April 1941. R2101 usually flown by W/Cdr John Cunningham
F.I.U	ZQ	R2125:V	Beaufighter 1f	February 1941. 'Day' colours



Top: R2198 was delivered to No 252 Sqn early in January, 1941. This was a Coastal Command long-range fighter squadron, but the machine here typifies the markings applied to over 100 of the first Beaufighters. Its upper surfaces are brown and green, the remainder duck egg green. Code letters were pale grey, not sky as elsewhere suggested. **Above:** R2052, the first prototype with black/white under surfaces. fin stripe is just being applied (Imperial War Museum), Photographed during the change of national markings, the

December, 1967

Several readers have queried our caption which stated Spitfire I DW-K to be N3289. The popular conception appears to be that this machine was N3029. In fact, there is no doubt that the aircraft illustrated—which did not survive long enough to take part in the Battle of Britain—was N3289.

Michael J. F. Bowyer

NEW

KITS AND MODELS

FOUR STAR KINGFISHER

FULL marks go to Monogram for their latest 1:48 scale product—a model of the OS2U-3 Kingfisher. This is one of the finest detailed kits it has ever been our privilege to review and although not so popular as some of the better known aircraft of the last war, it will be one of those models the quarter scale enthusiast will welcome.

The kit, which has 58 parts, can be built as either the floatplane or land-based aircraft with fixed undercarriage. There are markings for an aircraft of the US Navy or Royal Navy; both sets of transfers being extremely well printed in matt colours.

Cockpit detail on this model is excellent. Both front and rear canopies can be built in the open or closed positions and if the latter is chosen all the instruments on the panel and cockpit sides are visible. Monogram have left tiny push-through holes in the fuselage and wings whereby rigging wires can be inserted.

Our sample was supplied by BMW Models of Wimbledon, who had stocks of the kit. It costs 27s 6d. *A.W.H.*

NEW TRANSFERS

FOUR sets of very useful ABT transfers from France have recently been sent to us for review. These are No 26 for the Junkers Ju 87, No 33 for the Fiesler Storch, No 34 for the Morane Saulnier MS406, Dewotone 520 and Bloch 152, and No 37 for the Messerschmitt Bf 110. Each one is excellently printed as well as very accurate. We particularly liked the colourful French aircraft sheet. The Bf 110 contains a set of transfers for the Wespen Geschwader 2/ZG 1 when in the Soviet Union as well as for an aircraft used in the Battle of Britain and a night fighter version. The price of each is 3s 6d, and they are obtainable from BMW Models.

Latest releases from the Danish Stoppel company are a set of markings for Spain, Belgium, Ghana, Bolivia and Ethiopia. What a mixture! Nevertheless, these transfers will be a valuable addition to the ever-growing numbers of national markings available and are most welcome. Retail price is 3s 6d, and they can be obtained from BMW Models.

Replica Decal has been having printing troubles during the last few months but at last they have overcome their difficulties and are once again in production. Their long awaited sheet of transfers to provide alternate markings for the two Impact 1:48 scale kits, the Fury and Gladiator, have been received and they have produced a set of transfers well worth having. The blue of the roundels is slightly better than those produced with the kits. Each piece is on an individual slide and printed matt. Markings for a Gladiator of No 3 Squadron and another of 261 Squadron come on the same sheet as those for a Fury of No 25 Squadron. Price is 4s.

Replica Decal's R1 sheet, again for 4s, consists of a Middle East set including an Israeli Mirage III, a Jordanian Hunter F6 and a MiG 21 of the Syrian Air Force. These are all 1:72 scale for the relevant Airfix models. *A.W.H.*



Above: Monogram's OS2U-3 Kingfisher finished as the US Navy floatplane version. Royal Navy transfers and wheeled undercarriage are additional options.

JAPANESE CHOPPER KIT

LATEST kit to come from the Japanese Fujimi company, a 1:50 scale Iroquois, appears to be a copy of the Aurora offering reviewed in these columns about a year ago. Everything appears to be the same with the exception of the two .50 cal machine guns on the American product. The transfer sheet also differs.

This does not mean to say that the Japanese product is in any way inferior, far from it. Being the only model of the Iroquois on the market, it is a reasonably accurate replica of an aircraft that is in large-scale service. The kit contains 57 parts moulded in dark green plastic. The instruction sheet is in English.

Transfers depict either an aircraft of the US Army or of the Japanese Ground Self-Defence Force. Price of the kit in UK is 13s 11d and it can be obtained from BMW Models in Wimbledon who supplied our review sample. *A.W.H.*

REVELL IN SPACE

TWO kits released this month from Revell are of the Gemini and Apollo space craft. The former is to 1:24 scale and the latter to 1:96. Both kits are extremely fine specimens of this manufacturer's craft and are most instructive.

In the case of the Gemini capsule, both astronauts provided are fully detailed with clear plastic visors to their space suits. The interior of the craft is also fully detailed and will require some considerable time and patience in painting all the correct colours on the instruments and sub-assemblies. The model fits well together and makes an attractive display. It has more than 80 parts, and costs 20s 3d.

The Apollo model has six separate sections. Topped by the Command module, there are also the service module sections, the descent stage assembly, and the various parts which will be used by the astronauts on the moon's surface and also those needed for the return to earth. A lunar base is provided which simulates the moon's surface and the

Continued on page 156



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B42 M-4 Sherman Tank;
B43 M-47

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1/32 made by Niahon:
B27 M-24 Chaffy Scout Tank, 27/6;

B28 Russian Stalin Tank JS-111, 27/6; B29 Japanese Tank Type 61, 27/6.
Made by L & S, 1/35:
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New Kits—continued

various sections can be assembled on it, each part clipping together. There are over 50 parts to the kit, which costs 14s 3d.

The Gemini kit includes an eight-page booklet giving an illustrated account of the space exploration programme which went under that name. *A.W.H.*

AMERICAN TRANSFERS

AIR Decals is a new company that has set up in the United States with a declared policy of starting slowly and building a business founded on super accuracy in both colour and insignia.

So far, five sheets of markings have been produced. These include a complete set of USAF, NAVY, MARINES, ARMY and Military Air Transport Service insignia on a 10 inch by 8 inch sheet in black; a similar one in white; Chinese Nationalist markings; Israeli national markings and Japanese Hinomarus in virtually every size. For the price of \$1.25 these sheets are good value.

Don Sperring and his two brothers who are running the business are also ardent model makers, having their own large collection which is well known in the States. At present there are no UK agents, but the sheets can be obtained direct from America by writing to AIR Decals, Box 303, Pemberton, New Jersey, USA 08068. *A.W.H.*

AURORA AIRCRAFT

AS stated last month, the Aurora company have recently set up a subsidiary in the UK to market their plastic kits, and supplies of some of the older Aurora kits are once again on the market.

Samples of the S2 Tracker, Beech Super 18, Spad XIII, SE5 Nieuport 28 and Fokker Eindekker recently arrived for review. Apart from the first two mentioned these are all to quarter scale and, with reservations, are good models for the enthusiast who does not mind doing a few mods to bring his miniature replicas into line with their full scale prototypes. The biggest chore is, of course, the need to sand off the raised indications of where the transfers are to go.

Both the Beech Super 18 and the Tracker are to odd scales and do not include undercarriages, though the Beech is not too far off 1:72 scale. All these kits cost 12s 6d except for the Beech Super 18, which is 10s 6d. *A.W.H.*

MORE NEW TRANSFERS

NEW this month of a new manufacturer and another offering from the Northern California Chapter of the IPMS. Don Garrett, Jack Perella and Tom Knott, who are the prime movers behind the Authenticals transfer sheets, have now produced their second and third sheets which are exceptionally well done. These consist of really authentic Hinomarus for Japanese World War 2 aircraft in 1:72 scale and 1:48 scale, markings for Hofer's P-51B *Salem Representative*, Gentile's *Shangri-La* and *Ole-II* flown by Lt William J. Novde.

Each set of transfers, which sell for \$1 in USA, has a sheet of information about the aircraft represented and details of the sources used to ensure the accuracy of each item. These are truly in the best interests of the hobby and the trio are to be congratulated on their products. Out shortly will be markings for five P-47s and ETO markings in 1:72 scale giving 21 variations, 50 each.

Newcomer to the British market is Colour Authenticals, 248 Leyton High Road, London N10, whose first release is a press-out sheet of competition numeral discs for application to 1:32/1:24 scale slot racing models. This offers a good selection of numbers on both black and white discs. These are not, in fact, transfers, being actual printed numerals. Price is 2s per sheet. *A.W.H.*

DISPERSAL BAY

LATEST product from Merberlen in their Bellona Diorama range depicts an airfield dispersal bay—similar to that illustrated on last month's front cover—in 1:72 scale and sized to take single-engined fighters (eg, Spitfire, Hurricane and Defiant) and most 'light' twins like the Whirlwind. This is a vacuum formed plastic structure with earth banks and brick revetting moulded in mud brown plastic. It comes on a base with an air raid shelter as a companion piece. This has a removable roof, bench seats, and a blast wall and all the parts are simply cut with scissors from the common base. These are obviously invaluable accessories for scenic modellers and, in addition, the dispersal bay makes an attractive setting on its own for displaying an individual aircraft model. Price is 10s 9d, postage extra.

First of a new series of Bellona Handbooks has also just been published, called *Military Field Works of the 18th and 19th Centuries* by William Holmes. This is a 24-page booklet which sketches and describes all sorts of 'military engineering' of a century or so ago. Divided into sections, at its modest price of 5s this will be a handy reference book for wargamers and scenic modellers. *C.O.E.*

NEW PAINT RANGES

SAMPLES are now to hand of two more paint ranges of importance to modellers. Humbrol have for many years included a few colours in their standard range which corresponded closely to MAP or other shades, but this firm has now released the first of a series of authentic camouflage paint sets which should solve a lot of problems. Set 1 consists of six pre-mixed RAF shades for the European Theatre, 1939-45, and includes Duck Egg Blue, Ocean Grey, Sea Grey Medium, Sky, Dark Earth, and Dark Green. Set 2 includes the most common Luftwaffe colours, Schwarzgrün, Dunkelgrün, Helgrau, Dunkelgrau, Hellblau, and RLM Grau. Leaflets in each set give brief details of application and include a typical camouflage sketch. These are very quick drying paints, thinner than standard Humbrol and very smooth to apply. All the shades are carefully matched and are available only in sets at 9s 6d a time.

'Official' paints are a range now being imported from USA by Aviacolour, 466 Eastern Avenue, Gants Hill, Ilford, Essex, at 4s 6d per jar. Like the Humbrol paints these are matched shades, but there are more than 70 colours available, including USAAF, USN, Japanese Army and Navy, and Luftwaffe colours. A catalogue and listing is available from Aviacolour at 4d to anyone sending an SAE and this is a useful little publication in itself as it gives official designations and brief application details of all the colours as well as the 'Official' order number. Among our samples were such useful colours as Zinc Chromate for US aircraft interiors, Olive Drab (also effective on US tank models), German Gelb Braun (pink-sand), USAAF Neutral Grey and Medium Green, USN Non-specular Sea Blue and Intermediate Blue, and Japanese Navy Green. We found these paints to be thinner than the new Humbrol paint—in fact light coloured plastic needed two coats at least—and they dried with slightly more of a sheen. *C.O.E.*

HUMBROL SCRAMBLE

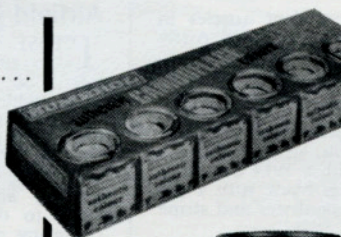
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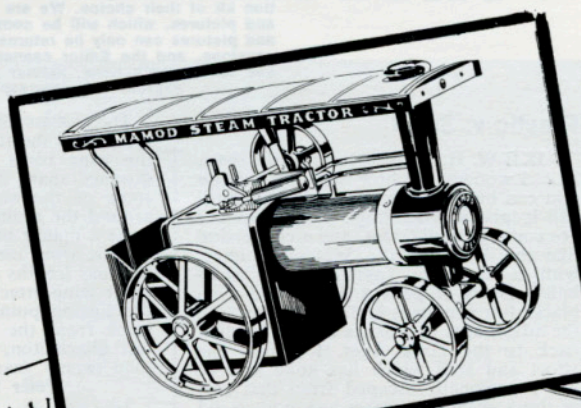


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Letters to the Editor

Letters to the Editor can only be answered in the magazine. Readers whose letters are published each receive a free Airfix plastic construction kit of their choice. We are always pleased to receive your comments and pictures, which will be considered for publication. Submitted material and pictures can only be returned if accompanied by a stamped addressed envelope, and the Editor cannot accept responsibility for safe keeping of any such contributions, neither does he necessarily agree with comments expressed by correspondents in the letters columns.

Plastic v. Solid

LIKE W. H. Hosker, in the June issue, I wonder just how much solid balsa you can build into a conversion and still call it 'plastic modelling'. The techniques are completely different, and a conversion like the York, in the September issue, with a complete fuselage from solid balsa, hours of patient filling, and even blacked-in windows, is throwing away all the advantages of plastics and going right back to the Dark Ages. I respect the effort and skill which has gone into it, but I personally escaped from that sort of thing twenty-five years ago, and so did other people too, I fancy.

My way out derived from the Aero-models kits which were described in the August issue, and during the war I developed this form of modelling in card to cope with the more complex shapes of those days, compared with the models of mostly fabric covered machines in the original large scale series. Wing and tail surfaces were always easy in card, but fuselages and nacelles needed careful planning, and a little help from moulded or shaped parts. My 1:72 scale models included the Mosquito, Liberator, Horsa, Botha, Defiant, and FW190, so I consider that it was a versatile method; and I made a 1:144 scale York, with windows, in 1943.

Plastics to me mean modelling in shell form, with interior cavities, all transparencies, fine surface detail, and a directly paintable surface. All these requirements can be met with card shells, which can have panel outlines, ribs, and other surface details impressed from outside or inside; even rivet lines are possible, if one has patience to spare. No doubt there are other methods which harmonise with plastics as well, but solid balsa, and hours of filling, not for me!

So far you can write this off as just another opinion, but the second matter is one of fact, and if enough people do the York conversion according to the script and pictures, and then compare the result with the front view on page 22, or check the scale span, you may have some explaining to do. The point is, that the full scale Lancaster wing had a one-piece centre section, and the wider York frames were built on to the same spars, so that the gap between each inner engine and the fuselage side was nearly a foot and a half less than on the Lancaster. If the divided centre section of the kit is fitted on either side of the York fuselage, as described, then this clearance is the same as on the Lanc model, and the span correspondingly too large. The difference in span may not show, but the power plant spacing certainly does.

The easiest solution would be to cut recesses in the top fuselage sides, so that the wing roots can be set the correct distance apart, and this would also save some of the more awkward gap filling around the radiused edge.

As a matter of interest, the dimensions of this wing centre section, particularly the spar lengths and the distance between outer wing attachments, which were also the jiggling points, remained exactly the same from the first Manchester to the last Shackleton, over a period of more than twenty years.

Peter Rivers, Stockport, Ches.

We did not claim the York to be a conversion in the accepted sense of the word. The fact remains that a model of this aircraft has been much-requested by readers and the way of making it as advocated by Alan Hall is as easy as any for the average modeller with limited time and not limitless skill. —
EDITOR.

Danish Guards

THANKS to the excellent articles in your magazine on converting Airfix soldiers, I have now brought my collection up to 122 soldiers from over 80 different countries.

I thought readers may be interested in making soldiers of the Danish Palace Guard. To make them, use the Guards Colour Party body with a 1914 German's helmet. The uniform is black with white collar, cuffs, gloves, epaulettes and stripe on the trousers.

Officers can be made from the Civilian Policemen with their heads cut off and a French World War I infantry hat substituted. Again the uniform is black with yellow cuffs, collar, epaulettes and stripe on the trousers; no belt is worn. The hat has a white stripe on each of its four seams and another white stripe running round it. The helmet is painted gloss black with a large silver badge on the front and a brass stripe running down the back as well as a brass spike.

Julian Thomas, Huddersfield, Yorks.

Cheap drill

TO help other modellers, here is a method of making a cheap, effective electric drill, which up until now has proved very useful.

I bought, from a local branch of chemists a Cordless Electric Mixer/Blender made by Dencon for 4s 11d plus battery. This consists of an extension shaft with the mixer moulded on, and a plastic-cased electric motor. The shaft of the motor sticks out from the casing and

has a plastic joining socket for the extension, pushed on to the shaft.

I modified it as follows: (1) Carefully ease the plastic joining socket off the motor shaft. (2) Obtain a piece of soft plastic rod, or as in my case, a piece of aluminium rod, about $\frac{1}{8}$ inch in diameter or just over, and about 1 inch long. (3) Carefully drill a $\frac{1}{16}$ inch diameter hole $\frac{1}{2}$ inch deep at one end, and (in my case) a $\frac{1}{32}$ inch diameter hole $\frac{1}{2}$ inch deep from the other end. Care must be taken to keep both holes in line, otherwise the drill will rotate eccentrically and cut too big a hole, and it will be difficult to position the hole properly. (4) Push a $\frac{1}{32}$ inch drill into its hole in the rod (a dab of Evostik will lock it if the hole is too slack). Gently push the rod on to the motor shaft; it can be packed to make it tighter or the metal gently squeezed to make a fit. It is not necessary to make it a very tight fit. (5) Switch on and drill. You now have a combined drink mixer and drill.

R. Aylward, Slough, Bucks.

Airfield jeep

THOSE readers who require vehicles to complete their airfield layouts might be interested in a simple little model which can be constructed with the minimum of fuss—a jeep with a large placard at the rear bearing the one word 'FOLLOW'. The prototype of this model was in use at Valley in August, 1945, for guiding aircraft round the perimeter track to dispersal. I forget the actual colouring of the sign, except that there was some yellow on it. Perhaps some other reader could supply more details.

The DUKW was also used by the RAF, one being used at Valley from 1949-1950 for Air Sea Rescue purposes. This particular vehicle was minus the machine gun mounting supplied in the kit, and was fitted with a pair of sheerlegs at the rear, until someone tried to use them to lift a Goblin engine out of one of the Vampires. They bent!

Perhaps these two vehicles will help to fill the demand for airfield accessories.

D. Harnam, Denbigh, North Wales.

Track problem

FIRST of all I must thank Airfix for the 88 mm gun and tractor. I have made a lot of Airfix tanks and have found that the material of the tracks attacks the bogies of model. When I found the phenomenon, the attack was already advanced. I think there was a kind of chemical action between tracks and bogies. I tried paint coating but it was not efficient. Please let me know

AIRFIX magazine

your counterplot against the action. What can I do against it?

Koyu Go, Tokyo, Japan.

We frequently get asked this question and just about the only answer we've found to the problem is to ensure that all parts—bodies, wheels, etc—which come in contact with the track are thoroughly coated with paint and left to dry out before the track is added. —EDITOR.

Stirling query

READING Mr Bowyer's article in the January, 1967, issue, I notice that he does not mention that Short & Harland's factory at Belfast was also affected by enemy bombing. The main assembly shop was damaged on April 15, 1941, and the flight hangar was hit on May 5, destroying several Stirlings in the serial range N6025 to N6029, although N6028 certainly survived. I was one of several RAF wireless operators attached to Short & Harland's at the time and I have a vivid recollection of afterwards seeing in the hangar a battered Stirling which had a Hurricane blasted sideways into its fuselage.

We W/Ops used to fly with the Air Transport Auxiliary crews who delivered the aircraft to Wyton, Alconbury, or Oakington. The Stirling's undercarriage weakness showed itself on August 28, 1941, when the starboard leg of N6047 collapsed just as we were turning on to the runway for take off on the delivery flight.

C. A. Carter, Uxbridge, Middx.

Michael Bowyer writes: *According to records N6025-28 and N6031 were destroyed by bombing and there is no evidence that N6028 was ever delivered. N6047 was used by 7 Sqn and as LSP by 15 Sqn with whom it was serving when it failed to return from a raid on Nuremberg.*

Making tracks

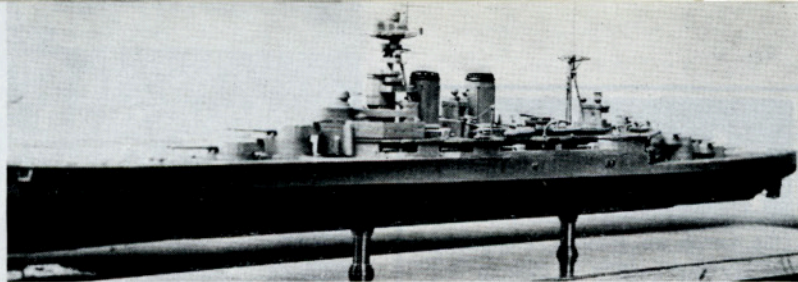
IHAVE found that a good material to use for tank tracks in scratch-building is the backing from foam rubber window insulation strip. It comes about $\frac{1}{8}$ inch wide and is ideally rigid to give the impression of track shoes.

Michael Hollow, Romford, Essex.

Modelling the 'Hood'

AS a lad I was greatly impressed by the fact that Britain had the largest and fastest warship, HMS Hood, and before the war I made several models in wood from available pictures. When Airfix produced a plastic model I purchased it with the main idea of taking realistic pictures. While constructing the model I inserted ballasting to make it float to the waterline which it does most realistically. I studied photographs to obtain as much additional detail as possible and the model is much enhanced by this. With regard to rigging lines and aerials, etc, the model is still incomplete and I wonder if you can tell me where further details can be obtained.

The model as so far completed is now in a glass case which I made to keep it away from the children. Painting was a problem, particularly with regard to getting a good matt finish; eventually I found that mixing Humbrol matt black in Humbrol gloss light grey to give the



Above: This finely detailed model of HMS Hood is, in fact, made from the Airfix kit with much added detail. With nothing in the picture to indicate scale, it could easily be mistaken for a large showcase model. Builder was H. S. Mason, whose letter appears on this page.

correct shade of Admiralty Grey also had the effect of giving a most perfect 'professional' coating in matt and I hope this tip might be useful to anyone else painting Airfix warships.

H. S. Mason, Northolt, Middx.

Finest drawings we know of HMS Hood are those by Norman Ough, which we think may be obtainable through Model Maker Plans Service, 13-35 Bridge Street, Hemel Hempstead, Herts. —EDITOR.

SU85 from scratch

AS a 1:76 scale scratch-builder I am an ardent collector of Bellona prints. I think one of the most interesting models I have made is a SU85 in German colours. The idea for the model came



from a photograph in AIRFIX magazine, April, 1966, in Military Modelling and from Bellona prints series 7. Camouflage is green on sand, the superstructure is plastic card with Centurion road wheels, Stalin III idlers, driving sprockets and track suitably trimmed. I enclose a photograph of this model.

A. Gotts, Hastings, Sussex.

Israeli Mirage

IREAD with interest your excellent article in the August issue on the Dassault Mirage series. I wondered whether any of your readers would be interested in modelling an Israeli Air Force Mirage 111 C from the Airfix kit.

The kit itself needs no alteration, but it is best to delete the Matra 530 missile from the Israeli version as none were fired in the recent conflict. The colour scheme is natural metal overall, with blue and white rudder striping at a 45 degree angle. (There should be 9 blue stripes and 9 white stripes). The aircraft has the red areas around the intakes in the same style as on the French version. Two red bands are painted around the rear fuselage as on the South African version (page 456 in your issue). The Israeli national insignia comprising a six-pointed blue star on a white disc is carried in six positions on the wing upper and lower surfaces and on the fuselage sides, these latter though appearing a little farther back than the French roundels on l'Armée de l'Air machines. The inscription 'Mirage 111C' is carried beneath the cockpit in the usual

position, as are the ejector warning triangles. The numeral '915' appears in black on the central portion of the fin and it should be noted that these are the same height as the French numerals. The unit badge of the IDF/AF crack No 101 Squadron appears at the top of the fin and comprises a red disc with a black winged skull superimposed. This badge in 1:72 scale should be $\frac{1}{4}$ inch in diameter.

R. Beasley, London, W11.

Jet Provost prototype

AFTER reading the Jet Provost conversion article in November's issue, I thought readers might be interested in knowing about the first prototype. This aircraft, still bearing its civilian registration G-AOBU, is now used as an instructional airframe in the department of aeronautical engineering at Loughborough University of Technology.

The aircraft is natural metal colour overall except for white top decking, fin and rudder divided from the natural metal part by a narrow blue cheat line. This line deepens around the nose bearing the name Hunting-Percival, in white script, Jet Provost, in red block letters, in each side. There is a University crest below this on the natural metal part. The registration appears on the fuselage in white outlined blue letters.

K. Fathers, Loughborough, Leics.

Nicolson's Hurricane

WHILST I was reading, and thoroughly enjoying, your article on RAF fighter colours 1940, in the November issue, I came across a rather perplexing situation.

I am related to the late J. B. Nicolson, VC, and since I am a keen, but somewhat inexperienced modeller, I thought it might be an idea to attempt a model of my relative's Hurricane.

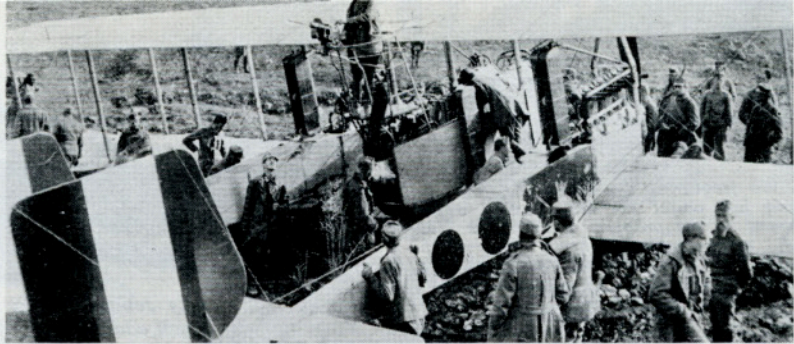
I went to the Imperial War Museum and they supplied me with the serial number as P3579. I later discovered the aircraft letters to be GN-A. However, and this is my reason for writing, you give his serial number as V6610. Please could you tell me which is correct?

James Nicolson, London, W6.

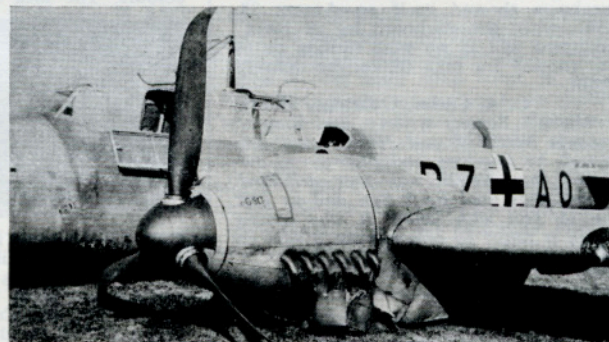
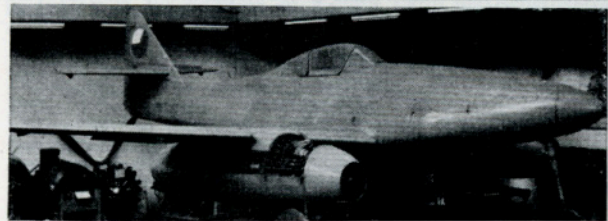
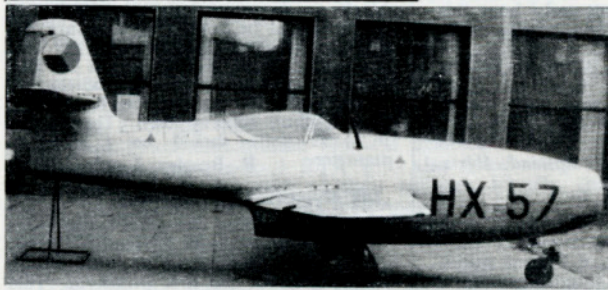
Michael Bowyer writes: *You are quite correct, V6610 was not the machine flown by Flt Lt J. B. Nicolson when he was awarded his Victoria Cross. This was P3576. The machine mentioned was merely one of 249 Squadron's aircraft in use in September. The number of the famous Hurricane was omitted somehow during production or compilation. Thank you for pointing it out. It is interesting to at last trace the code lettering of P3576 as GN-A. 'GN' would be carried forward of the roundel on the port side and aft on the starboard.*

photoPAGE

This month we present rare pictures submitted by two of our Czechoslovakian readers. Captions by **Michael J. F. Bowyer**. A free Airfix kit is awarded for every picture published, but please note that there is usually a delay of some months before publication due to the limited space at our disposal.



Above: Very rare picture from Rene Greger shows Austrian troops examining a shot down Italian Caproni three-engined bomber in October, 1917, on the Austrian front.



Further pictures from Rene Greger show (top) Yak-23 (Czech C-101) and (above) Me 262 (Czech S-92) in Czech Air Force markings and now in the Czech Air Force Museum. Note that cannon ports are faired over on the Me 262. Pictures from V. Konig show (top, right) a Ju87B, ANO:HP, possibly of Stuka'2, pictured in November, 1941, and (lower, right) a Me 110D, possibly of Wekasa 1, in October, 1941.

Armstrong: Camel Pilot Supreme—from page 148

audacious loop straight from the tarmac as it were, the eyes of every onlooker would follow the machine as it sped towards them. And again the Camel would be seen to rise, climb vertically, reach an upside-down position and continue its circular course which formed a loop. But if his loops provided a wonderful spectacle, Armstrong's flick rolls were liable to cause the spectator to become temporarily speechless with astonishment. Across the aerodrome he would fly, his Camel leaving behind its trail of castor oil smoke emitted by the engine. Then, again when close to the hangars, where aircrew and mechanics were assembled, he would display his superb mastery of his aircraft and unsurpassed sense of judgment.

With literally inches to spare, this

wonderful pilot would carry out his flick roll which meant, of course, that the Camel turned over sideways and then returned to its normal horizontal position. This aerobatic manoeuvre occupied but three to four seconds and so there was no time to correct the slightest error of judgement. Knowing the risks he was taking, it was hardly surprising that we who watched held our breath. Even after all these years, I can recall clearly seeing the wing tip of that Camel clear the ground by no more than twelve inches as it rolled around.

Obviously Armstrong was a fellow who liked to expose himself to calculated risk. I saw him perform on a number of occasions and the first time I have reason to remember well for I was in the process of landing an Avro 504 at the little aerodrome at

Waddon when I spied a Camel immediately below me and flying in the same direction. I was flying at about 500 feet and was about to turn for my final approach when I was not a little startled to see that Camel climbing vertically in front of me and not so far away. I kept the machine in sight for a brief moment and got a fleeting glimpse of it as it entered into a loop. Later I learned that the pilot was Lieutenant D. V. Armstrong. Before the war ended he was transferred from No 44 Squadron to No 151 Squadron and for a short time served in France before he was killed.

In later years this airman became a legendary figure amongst those of us who have survived and in conversation about the old flying days the question is still asked, 'Did you ever see Armstrong fly a Camel?'

New Books—from page 140

this book was compiled, some of the 16 systems it describes have been cut back or have even been completely closed. Disappointingly this is not a complete coverage of all Britain's operators—the terms of reference appear to be remaining and recently deceased systems—but an interesting table lists all British systems with opening and closing dates.

Model car compendium

CATALOGUE OF MODEL CARS OF THE WORLD, by Jacques Greilsamer and Bertrand Azéma. Published by Patrick Stephens Ltd, Brooks House, Upper Thames Street, London, EC4. Price 84s.

THIS big 300-page book must be the 'last word' for model car enthusiasts. As its name implies, it is principally a ready reference book, listing more than 7,000 model cars which are—or have been—available commercially. Each make and each country is dealt with in order, the models and ranges being listed chronologically with details of scale, materials, catalogue number and type being presented in a standardised form of layout. While most model cars are die-cast, there is also a large section devoted to plastic cars with the offerings of manufacturers like Airfix and Revell among many other more obscure makes, some of which we had never heard of before! In addition to the catalogues, there are numerous other chapters dealing with the history of model cars, 'ancient' toy cars, scratch-building, military models, conversions, clubs and collecting, model car manufacture, and custom-built models. There are hundreds of pictures and many colour plates, the complete book adding up to a mine of information for the model car collector.

ARE YOU A KIT CONVERTER?

We have many letters from readers requesting back copies of AIRFIX MAGAZINE containing conversion articles. Back copies of some issues are still available for the benefit of readers who may have missed or mislaid earlier editions. For example, here are some of the practical articles which have appeared.

1965: September — Jeep conversions and Battle of Britain colour schemes. **1966: July** — RF-4C Phantom conversion. **September** — Matador variants. **October** — Spitfire trainer. **1967: May** — Crimean War and Do 217 conversions. **June** — Mosquito profile. **July** — Soviet missile tank. **August** — Early Churchills. **September** — Avro York model. **November** — Japanese tankette and 'Daring' conversions.

Would readers please note that all issues **not** listed above are now out of print and can no longer be supplied.

Back copies cost 2s each (including postage) for all copies up to and including September, 1966. From October, 1966, onwards the cost is 2s 6d an issue, post paid. Please address all requests for back copies, together with your remittance, to our circulation department at SURRIDGE DAWSON & CO (PRODUCTIONS) LTD, PUBLISHING DEPT, 26 ABERDOUR STREET, LONDON SE1.

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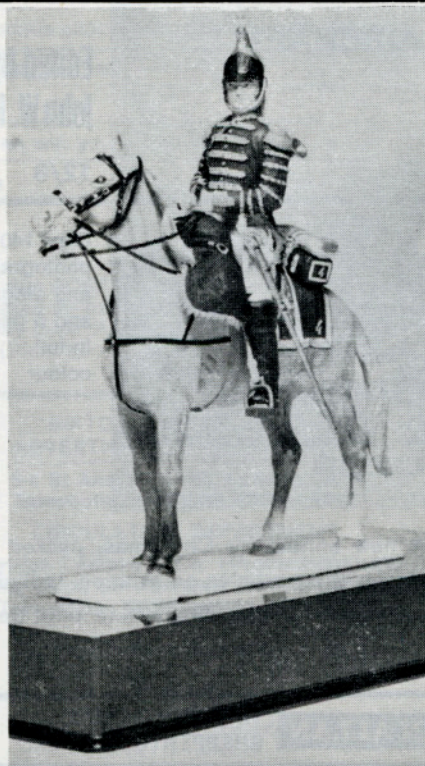
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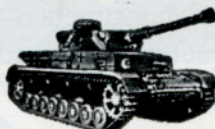
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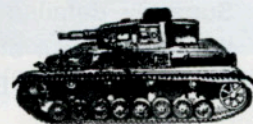
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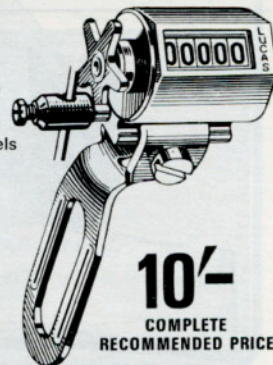
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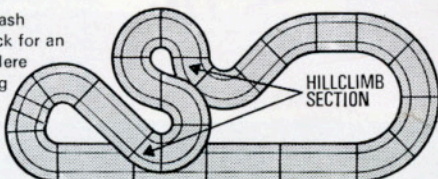
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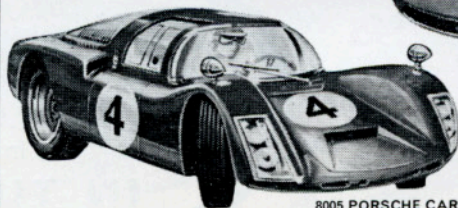
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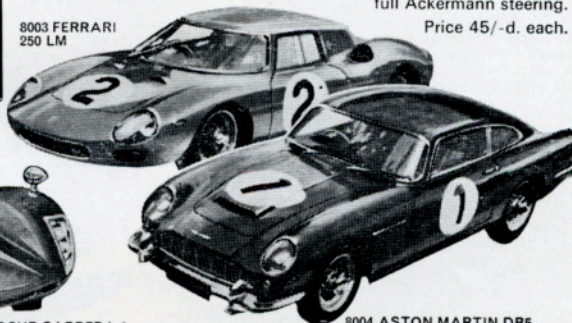
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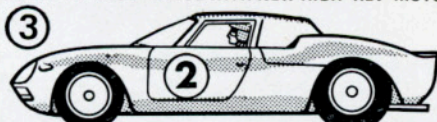
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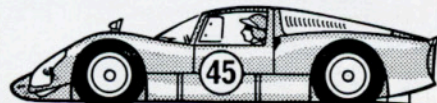


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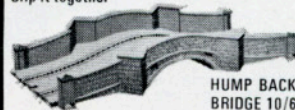
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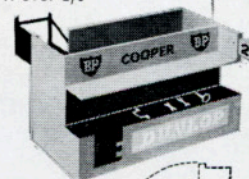
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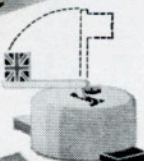


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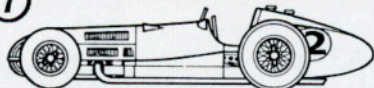


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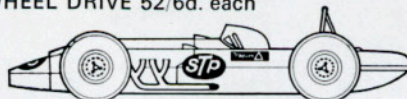


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COLOURS AND NOTES

JAPANESE COLOURS

RJ1 Jungle Green RJ2 Dark Green
RJ3 Brown RJ4 Pale Grey
RJ5 Barre Metal RJ6 Violet
RJ7 Sky Blue RJ8 Metallic Blue

RJ1. In general, all land based Japanese aircraft on upper and vertical surfaces. RJ2. In general all Japanese Navy aircraft. RJ3. Used in irregular patches on background of matt aluminium (RJ5), also mixed with Jungle Green (RJ1) for certain bombers. RJ4. Used by Air Force for undersurfaces of wings and fuselage, or for complete aircraft. The Navy also used this in the same way with motor cowling black or matt red. RJ5. Used only for land based aircraft with Jungle Green (RJ1).

GERMAN COLOURS

1938-44

RL1 Black Green RL2 Med. Green
RL3 Blue Grey RL4 Sand
RL5 Pale Blue RL6 RLM Grey
RL7 Yellow RL8 Pale Grey
C1 Black RL9 Dark Green

RL5. Pale Blue, official code 'Blau 50'. Top surfaces down to $\frac{1}{2}$ height of vertical surfaces and top and bottom surfaces of certain night fighters. RL4. Yellow Sand, 57 Gelbe Braun., for aircraft in North Africa. RL3. Dark Grey-Blue, 66 Schwarzgrau. Top surfaces for Battle of Britain and also for patches on night fighters. RL2. Dark Green, 73 Grün. Top surfaces of wings and fuselage (top third) and generally background colour for all aircraft. RL1. Spruce Green, 71 Dunklegrün. Used for camouflage patching with RL2. RC1. Black, 22 Schwartz. Undersurfaces of night intruders and all over for heavy night fighters. RL6. RLM Grey, 43 02 RLM Grau. German colouring prior to 1939 and subsequently an anti-corrosive paint and for interiors. RL7. Service Yellow, 04 Gelb. For yellow bands on rudders, prop spinners, fuselage stripes, letters, figures, squadron markings, etc.

FINNISH AIR FORCE COLOURS

RFL1 Dark Green
RFL2 Light Blue

ITALIAN AIR FORCE COLOURS

Ri1 Sand Ochre Ri2 Green
Ri3 Sky Grey

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US AIR FORCE AND NAVY COLOURS

U1 Gull Grey U8 Grey White
U2 Neutral Grey Viet Nam
U3 Olive Drab U9 Earth
U4 Dark Green Viet Nam
U5 Chromate U10 Olive Green
Green Viet Nam
U6 Pink Sand U11 Dark Green
U7 Azure Blue Viet Nam

U.S. NAVY COLOURS

UN1 Light Grey
UN2 Dark Blue Grey
UN3 Inter Blue
UN4 Chrome Yellow
UN5 Midnight Blue
UN6 Aircraft Grey
UN7 Medium Blue

Details of colours send SAE for leaflet.

R.A.F. COLOURS

RA1 Earth RA8 Duck Egg Blue
RA2 Dark Green RA9 Trainer Yellow
RA3 Sea Dark Grey RA10 Saddle Grey
RA4 Medium Grey RA11 Dark Brown
RA5 Sky RA12 Extra Dark
RA6 P R U Blue Sea Grey
RA7 Sand RC1 Dull Black
RC5 Metallic Grey-Black
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F3 Green F4 Inter-Grey
F5 Sky Blue Grey F6 Dark Brown
F7 Dark Blue Grey

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N.A.T.O. COLOURS

RN1 Nato Blue Grey RN3 Nato Sky Blue
RN2 Nato Dark Green

STANDARD COLOURS

RC1 Black RC4 Red
RC2 White RC5 Tyre Rubber Black
RC3 Yellow RC6 Outremer Blue



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